RadoNorm
Managing risks from radon and NORM

Deliverable 7.3

Exchange visits of PhD students/early career researchers and the funded courses and numbers of their participants

Work Package: 7

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Executive Summary

RadoNorm integrated E&T activities into the scientific and technical development work of the project by initiating a PhD and postdoctoral grant programme which was open to talented students and early career scientists from all European countries. As such, 29% of its budget was allocated towards education & training activities for PhD students and postdoctoral fellows as mentioned in its proposal, far exceeding the stipulated 5% in the NFRP 12 funding call of the EURATOM Horizon2020 Work Programme 2019-2020.

As part of this initiative, 200,000 € were dedicated to travel grants for RadoNorm PhD students and postdocs to promote their involvement in radon and NORM (naturally occurring radioactive material) research. In addition, 700,000 € were dedicated to funding training courses to teach necessary knowledge and skills to the next generation taking up research related to radon and NORM.

This report will describe the use of these funds to support travel of RadoNorm PhD students and postdocs as well as incorporate their feedback on the usefulness of the travel grants. It will also reflect on the organisation of training courses and how these courses were received by the participants.

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1. RadoNorm Travel Grants

As part of Task 7.3 of RadoNorm, it was planned that exchange visits will be organised and funded by RadoNorm to train PhD students and early career postdocs in RadoNorm (collectively called early career researchers; ECRs) skills in techniques relevant for the work programme of RadoNorm. At the beginning of the project, 200,000 € were made available for funding such exchange visits as well as travel for participating in conferences, meetings and other research-based activities. This would simultaneously help RadoNorm in its dissemination and communication activities, where RadoNorm ECRs would actively report results in international meetings. The success of the achievement in WP7 would be measured by the number of ECRs benefitting from the travel grants.

Quarterly calls[1] were set up for RadoNorm ECRs to apply for travel grants (Appendix A), where a maximum of 1000 € was awarded per person, based on final costs. Consequently, there were 18 calls between March 2021 and March 2025, with a total of 133 travel grants being awarded and used among the 39 ECR positions within RadoNorm (Figure 1).

Figure 1 shows that while the number of awarded travel grants was relatively small at the beginning, this number gradually increased over the years and decreased once again towards the end of the project. The initial lack of interest could be due to COVID-19 still restricting travel and the organisation of events across the globe. Participants used the travel grants to attend events such as scientific conferences, meetings of scientific bodies, training courses, RadoNorm annual meetings and exchange visits to RadoNorm partners and other international institutions. This showed that ECRs appreciated the availability of these grants and made use of them to their best extent.

The positive impact of these travel grants was additionally reflected in a survey conducted by the ECR council during the RadoNorm final meeting, where ECRs commented on how useful the grants were in

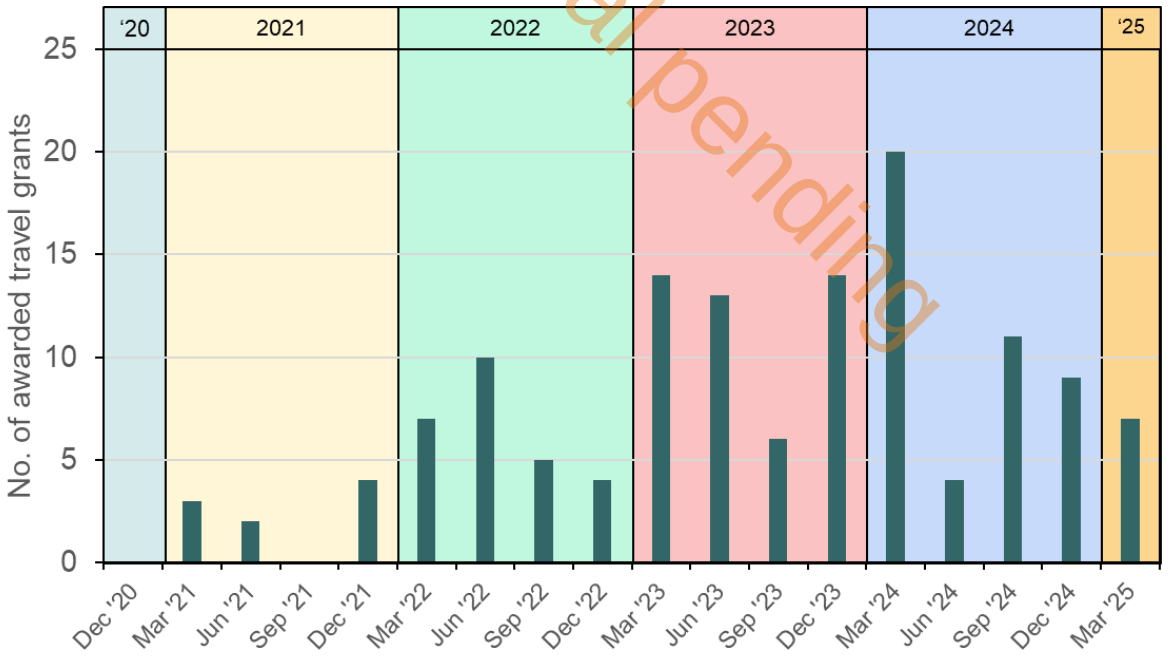

Figure 1: Number of Travel Grants awarded and used by RadoNorm ECRs

[1] www.radonorm.eu/calls/call-for-travel-grant/

their careers and complimented their ease of use and approval from supervisors due to the availability of funds.

Figure 2 shows the distribution of travel grants among RadoNorm partner countries.

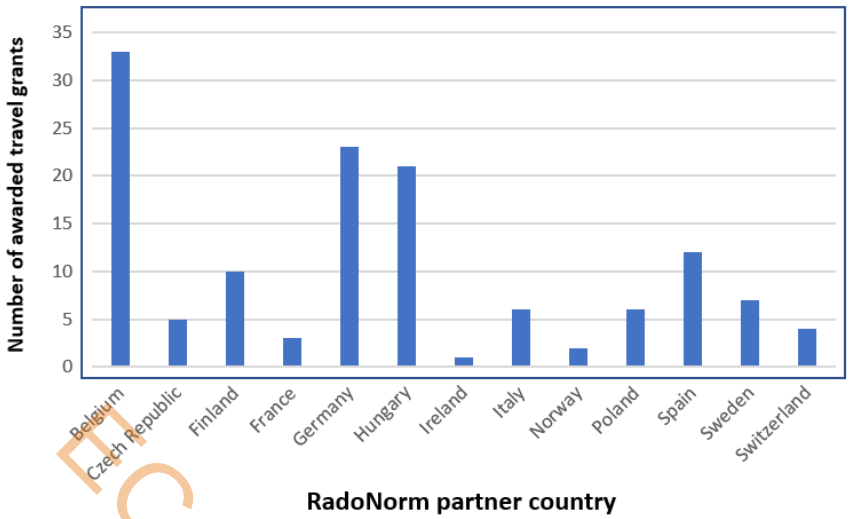

Figure 2: Number of Travel Grants awarded to ECRs from partner countries.

Most travel grants went to Belgium followed by Germany, Hungary Spain, Finland, Sweden, Italy, Poland, Czech Republic, Switzerland, France, Norway and Ireland.

During the middle of the project, it was also observed that the 1000-€ limit was restricting longer exchange visits and research stays, where elaborate experiments had to be conducted by ECRs in other institutes. As such a new type of travel grant called the RadoNorm Research Stay Travel Grant (RSG)[2] was made available, to fund such travels (Appendix B), typically lasting a few weeks to a few months and generally limited to 5000 € per month. A total of 13 RSGs were awarded and used between June 2024 and August 2025, allowing access to infrastructure and research opportunities that would have otherwise been impossible.

There was also interest in these grants from a considerable number of non-consortium members but, due to fiscal reasons, the grants could only be awarded to ECRs that were part of the RadoNorm consortium.

It should be stressed that a similar mobility programme (with same 4 deadlines for travel grant application per year) for ECRs was launched in the PIANOFORTE partnership that kicked off in June 2022. After each deadline for travel grant application, lists of applicants were exchanged between both projects to exclude double funding.

2. Courses

As part of Task 7.4 of RadoNorm, it was planned that topics and scientific areas generally relevant for research necessary for improved protection of people and the environment from harmful effects of ionising radiation and specifically for areas tackled by RadoNorm would be identified and open calls for targeted E&T activities would be launched. These activities were to take the form of short courses, teaching, workshops, practical work and summer schools geared for ECRs. As such, yearly calls[3] were

[2] www.radonorm.eu/calls/research-stay-travel-grants/
[3] www.radonorm.eu/calls/call-for-courses/

published by WP7, inviting RadoNorm partners to submit applications for such activities, with funding awarded up to 10,000 € per week of activity and 150,000 € per call (Appendix C). The project's executive board would evaluate the proposals with respect to relevance and impact.

Consequently, a total of 25 training courses were organised over the span of five calls, organised by various RadoNorm partners and involving over 300 participants (Table 1). It was clear that there was considerable interest not just from RadoNorm ECRs but also from those internationally. Several Master students could also participate in some of these courses. For most of the courses, there was more interest than originally planned for, and for those courses that had fewer participants than originally planned, in some cases, it was due to the lack of funds available for participants' travel and participation.

Flexibility was offered within many courses to have an online component, especially where lectures were held, to allow for as much participation as possible without the need to travel. Laboratory courses took place in-person, teaching the necessary skills and encouraging interest in various topics in radiation protection. Several courses had considerable interest that they were offered multiple times. The courses themselves were generally positively rated through a standardised evaluation form (Appendix D) by the participants in terms of content, trainer and format.

Furthermore, the RadoNorm ECR Council also made use of the opportunity to organise their own training courses once each year around topics that were relevant to ECRs such as science communication, career perspectives and the use of artificial intelligence (AI). These courses additionally helped networking amongst ECRs and empowered them within the RadoNorm and radiation protection community to be independent.

The availability of funds within a project such as RadoNorm to organise courses was highly appreciated not just by the participants but by course organisers, who had the freedom to design and structure courses according to their expertise. Photos of some of the latest courses can be found in Appendix E.

Table 1: Training courses organised in the framework of RadoNorm WP7 activities

Call for courses	Course Name	Organising Institute(s)	Duration (weeks)	Expected number of participants	Actual number of participants	ECTS offered	Format
2021	Interdisciplinary radiation research on radon (InterRad)	BfS	2	12	20	3	face-to-face, can be adapted to online version lasting 1 week
	The art of public opinion survey analysis: Surveying the public on Radon and Norm	University Antwerp, SCK-CEN	1	15	21	0	online
	Naturally occurring radionuclides in work and natural environment - establishing the problem definition, finding sources and exposure assessment	GIG	2	16	15	7	online
	NORM impact assessment toolkit: from microorganisms to human cells	Aveiro University, Porto University	2	15	25	3	face-to-face, can be run online for two weeks
	Cellular effects of high and low LET ionising radiation – Introduction to radiation biology (CELET)	Stockholm University	2	12	15	3	face-to-face, can be run online for two weeks
2022	Application of Liquid Scintillation Spectrometry (LSC) for NORM measurements	GIG	2	16	10	10	face-to-face, can be run online for two weeks
	Naturally occurring radionuclides - when and why is presence is considered in terms of radiation protection	GIG	2	16	17	7	online

Call for courses	Course Name	Organising Institute(s)	Duration (weeks)	Expected number of participants	Actual number of participants	ECTS offered	Format
	NORM impact assessment toolkit: from microorganisms to human cells	Aveiro University, Porto University	2	15	25	3	face-to-face, can be run online for two weeks
	Cellular effects of high and low LET ionising radiation – Introduction to radiation biology (CELET)	Stockholm University	2	12	24	3	face-to-face, can be run online for two weeks
2023	Cellular effects of high and low LET ionising radiation – Introduction to radiation biology (CELET)	Stockholm University	2	24	18	3	face-to-face, can be run online for two weeks
	Transdisciplinary communication in Radon and NORM	Stockholm University	1	12	9	1.5	face-to-face, can be run online
	Naturally occurring radionuclides - when and why is presence is considered in terms of radiation protection	GIG	2	12	8	10	face-to-face, can be run online
	NORM impact assessment toolkit: from microorganisms to human cells	Aveiro University, Porto University	2	15		3	face-to-face, can be run online for two weeks
2024	Cellular effects of high and low LET ionising radiation – Introduction to radiation biology (CELET)	Stockholm University	2	24	32	3	face-to-face, can be run online for two weeks
	Qualitative Research Methods on the societal aspects of Radon and NORM: a hands-on experience	MERIENCE	2	30	15	0	face-to-face, can be run online
	Interdisciplinary Radiation Research on Radon (InterRad)	BfS	2	25	24	3	face-to-face, lectures can be held online

Call for courses	Course Name	Organising Institute(s)	Duration (weeks)	Expected number of participants	Actual number of participants	ECTS offered	Format
	Naturally occurring radioactive material - characterisation, inventory of related exposure situations and monitoring principles - stationary course	GIG	2	14	10	10	face-to-face, can be run online
	Sinergy Workshop on Translational and Clinical Oncology applied to Environmental & Occupational Cancer: Focus on Radon.	FCRB - IDIBAPS	1	10	7	0	face-to-face, can be run online
	Career management and perspectives in radon and NORM	BfS	1	20	6	3	face-to-face
2025	Radon therapy: theory and practice, benefits and health risks (RATH)	Stockholm University	1	14	8	0	face-to-face
	From radon measurement to optimized mitigation	SURO CTU	2	12		0	face-to-face, lectures can be run online
	II Sinergy Workshop on Translational & Clinical Oncology applied to Environmental & Occupational Cancer: Focus on Radon	FCRB - IDIBAPS	1	8		0	face-to-face, lectures can be held online
	Application of liquid scintillation counting (LSC) and alpha spectrometry for NORM characterisation	GIG	2	12		10	face-to-face, can be run online
	Naturally occurring radioactive material - characterisation, inventory of related exposure situations and monitoring principles - stationary course	GIG	2	14		10	face-to-face, can be run online
	AI in Science: Key knowledge, applications and challenges	GSI, University Granada	1	18	11	0	face-to-face, can be run online

Appendix A. Call for Travel Grants

Instructions for submitting applications for support of exchange visits of PhD students and early career researchers

1. General description

In order to learn or train skills in techniques relevant for the work programme of RadoNorm PhD students and early career researchers are welcome to apply for financial support of exchange/training visits to laboratories. Visits to RadoNorm beneficiaries and non-beneficiaries are possible. There are 4 application deadlines per year: 31 December, 31 March, 30 June and 30 September. The maximal level of support per applicant is 1,000 € per visit.

2. Rules for applicants

Who is eligible?

Early career researchers and PhD students who are employed in a beneficiary laboratory can apply.

Multiple applications from a single person are possible but priority will be given to first time applicants.

The support is granted:

For travel preferentially outside the country of residence.

To cover travel expenses [1] and lodging. A budget must be included in an application.

For a trip that will take place within 6 months after the application deadline.

An application must contain:

A motivation letter explaining how the applicant will benefit in terms of the aim of the programme.

A CV.

A letter of support from the head of the unit.

An invitation letter with motivation if the applicant is applying for travel support to carry out an exchange visit.

Reimbursement procedures:

The organization hosting the grantee and reimbursing his/her travel expenses will send information to the coordinator about the total amount [1] of travel expenses incurred.

Based on this, RadoNorm coordination proofs and transfers the respective budget [2] raised to the respective organisation.

3. Submission and evaluation procedure

The complete application should be sent by mail to radonorm@bfs.de. The decision about support will be made within 15 days after the nearest application deadline. The applications will be evaluated by the 8 members of WP7. A recommendation for funding will be based on simple majority, with at least 5 evaluators participating in the evaluation. The following evaluation criteria and ranking will be apply:

Relevance to RadoNorm: 1 (least) – 10 (most).

Scientific quality of the abstract or plan of visit: 1 (least) – 10 (most).

Potential benefit to the education of the applicant: 1 (least) – 10 (most).

Successful applicants will be required to submit a report on their visit on completion of the travel. Also, they are encouraged to share their experience on RadoNorm website and available social media channels. To this end please contact radonorm@bfs.de.

4. Considering the European Green Deal

When planning the travel please consider the possibility of reducing the carbon footprint. Actions to be considered include preferential choice of train transportation and minimizing printing of any paper material.

[1] Travel expenses must be reimbursable in accordance with ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS of the GA. Beneficiaries not receiving EU funding will not be taken into account for travel grants in accordance with ARTICLE 9 – RULES FOR THE IMPLEMENTATION OF ACTION TASKS BY BENEFICIARIES NOT RECEIVING EU FUNDING.

[2] The coordinator will not pay any invoices regarding travel expenses. There will be only a budget shift from coordinators budget to the respective beneficiary's budget.

Appendix B. Call for Research Stay Travel Grants

Instructions for submitting applications for Research Stay Travel Grants

1. General description

The RadoNorm Research Stay Travel Grant is meant to financially support RadoNorm Early Career Researchers with exchange visits, participation in long-term training courses and generally events that would further their training in radiation protection research, where the normal RadoNorm Travel Grant is inadequate to cover expenses.

From January 2025, the costs will be limited to 5000 € per month of travel. RadoNorm reserves the right to restrict budget.

Deadlines for application are 31 March, 30 June, 30 September and 31 December until the end of the RadoNorm project.

2. Rules for applicants

Who is eligible?

Early career researchers (hired to work on RadoNorm no longer than 5 years after completing their PhD) and PhD students who are employed in a RadoNorm beneficiary institution can apply.

Applicants should be directly working on a RadoNorm task.

Multiple applications from a single person are possible but priority will be given to first time applicants.

The support is only granted:

To cover travel expenses [1]and lodging. The budget must be specified in the application form.

For a trip that will take place within 6 months after the application deadline.

An application must contain:

A filled-out application **form**

Applicant's CV.

A letter of support from the head of the unit / supervisor.

An invitation letter with motivation if the applicant is applying for travel support to carry out an exchange visit.

3. Submission and evaluation procedure

The complete application should be sent by mail to radonorm@bfs.de. The decision about support will be made within 15 days after the nearest application deadline. The applications will be evaluated by the 8 members of WP7. A recommendation for funding will be based on simple majority, with at least 5 evaluators participating in the evaluation.

Relevance to RadoNorm: 1 (least) – 10 (most).

Scientific quality of the abstract or plan of visit: 1 (least) – 10 (most).

Potential benefit to the education of the applicant: 1 (least) – 10 (most).

Successful applicants will be required to submit a report on their visit, latest 28 days after completion of the travel. Also, they are encouraged to share their experience on RadoNorm website and available social media channels. To this end please contact radonorm@bfs.de.

4. Cost guidelines

Flights should be economy class or the lowest possibly carrier class offered by the airline.

Accommodation costs should be below or around the range of 100 € per person per night, unless otherwise justifiable.

Train and bus travel should be with tickets in second class.

5. Reimbursement procedure

The grantee will first be reimbursed for their travel costs by their hosting institution according to the institution's practices.

The grantee and hosting institution will inform RadoNorm about the total cost of reimbursement.

The hosting institution will claim the costs in their financial statement of the periodic reports.

Please note that the coordinator (BfS) will not pay any invoices regarding travel expenses. There will be only a budget shift from coordinator's budget to the respective beneficiary's budget.

6. Considering the European Green Deal

When planning the travel please consider the possibility of reducing the carbon footprint. Actions to be considered include preferential choice of train transportation and minimizing printing of any paper material.

[1] Travel expenses must be reimbursable in accordance with ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS of the GA. Beneficiaries not receiving EU funding will not be taken into account for travel grants in accordance with ARTICLE 9 – RULES FOR THE IMPLEMENTATION OF ACTION TASKS BY BENEFICIARIES NOT RECEIVING EU FUNDING.

Appendix C. Call for Courses – 5th Series

1. General description

Under Task 7.4 of the WP7 of RadoNorm, there will be annual calls for proposals to host short training courses.

The calls will be open to RadoNorm Partners. The purpose of the training courses is to provide Education and Training covering all aspects of the scientific research areas relevant to RadoNorm in order to develop expertise in the field.

The courses are primarily directed towards PhD students and early career researchers participating in RadoNorm but are also open to researchers from outside the project and to "citizen scientists" involved in WP6 of RadoNorm.

The courses may be based completely on the financial support provided by RadoNorm or include a participation fee.

Proposals will be assessed by the Education and Training Committee (ETC) consisting of the 8 WP leaders of RadoNorm on the basis of:

Relevance and value of the topic and coverage to the aims of RadoNorm

Quality of course content and expected learning outcomes

Expertise of the host institution

Practicality of the course arrangements

If the number of proposals exceeds the number that can be funded an objective points system (giving equal weight to the above categories) will be used to prioritise the applications.

If a proposal does not meet any particular criterion, and funding is available, the ETC may negotiate amendments and possible modifications.

2. Series 5 short-term training courses: invitation for proposals

Applications are invited for financial support to organise and teach a short course of duration from one to two weeks to be delivered between October 2024 and August 2025. The scheduling of the successful courses will be decided following the decision on the proposals (to be agreed between the course organisers and pending any COVID restrictions).

The proposed course may be either focused intensively on a single topic (of particular importance for RadoNorm) or more comprehensive (for the purpose of extending the range of student research skills and promoting cross-discipline collaboration). The length of the course should be justified by the content and purpose.

Teaching and training should be at the level of a Master of Science course or PhD training programme. The course (sub-module) could consist of lectures, tutorials and practicals and should be typically designed for between 12 and 20 students.

If possible European Credit Transfer and Accumulation System (ECTS) credits should be awarded to participants on successful completion of the course. However, this is not mandatory.

The possibility of holding the course via the internet should be highlighted.

Applications must be made using the template annexed to this document. **Please make sure you use the most recent version of the template.**

Timetable and submission of applications

The date for submitting application will be announced every year. The proposal should be made by completing the enclosed proposal form including annexes I-II, following the instructions given on the template, and submitted to radonorm@bfs.de by the deadline. All applicants will receive a receipt as acknowledgment of their application.

Invitation	Deadline for submissions	ETC decision*
01/08/2024	30/09/2024	15/10/2025

*This date may be subject to change if correspondence is required.

3. Financial details

Financial support from RadoNorm will be available for personnel (additional PM of the beneficiary and/or honoraria and expenses of lecturers), use of facilities and consumables, travel and accommodation of external lecturers, and may offer reimbursement for travel and provision of accommodation for participants.

The funding will be on the following basis:

Actual eligible costs, as per application template;

Total budget will be funded at a rate of 100% to a maximum of €6,000 EC contribution per week when there is no laboratory work; to a maximum of €10,000 EC contribution per week when the course includes laboratory work (as costed by the applicant);

should there be a justified need for additional funding beyond the proposed maxima, this will be reviewed by the ETC.

additional funding (own resources) beyond the maximum EC contribution by the course organiser is welcome[1]

Maximum of €150,000 EC contribution is available for this course series.

Affordable costs for accommodation can be included in the course budget but means of transport (flights, trains, etc.) are not eligible costs.

This distribution will be used as a reference, but the ETC decision is not confined to follow these amounts strictly but will reserve the right to adjust the sums according to the proposals. The applying project beneficiaries must fill in and attach to their proposal the budget templates (Annex I to the proposal form). Budgets may only include new costs (costs not already budgeted by this or some other beneficiary). If a common proposal with several beneficiaries is prepared, separate budgets for each beneficiary that will have costs are required. The budgets cannot be overlapping with each other if a common proposal is concerned.

RadoNorm course participants are highly encouraged to make use of the RadoNorm Travel Grants and RadoNorm Research Stay Travel Grants.

4. Reporting

Successful applicants will be required to submit a report on the course (including the feedback of the participants – see Annex I for an exemplary template) within 1 month after the course end. Also, they are encouraged to share their experience on RadoNorm website and available social media channels. To this end please contact radonorm@bfs.de.

5. Considering the European Green Deal

When planning the course please consider the possibility of reducing the carbon footprint. Actions to be considered include planning distant teaching to reduce travel, preferential choice of train transportation and minimising printing of paper material.

Annex I

[1] Applicants must observe Art. 5.3.3 GA and take this article into account when calculating their course costs

Appendix D. Course Evaluation Form

A suggested course feedback form.
To be placed on the web and filled out electronically, suggested platform: Google docs

General evaluation of the course (Please answer each question in one column by giving a numeric value between 1 and 5: 1= lowest, 5 = highest)

What is your general view about the quality of the course?						
Did the content of the course match your expectations?						
How difficult was it to follow the theoretical parts of the course?						
Did you have enough basic knowledge to follow the course?						
Would you have preferred to hear more lectures?						
How much knowledge did you acquire from the course?						
Did you miss certain subjects that you think would have been relevant?						
Specific evaluation of the course						
What did you think of the X1 lecture?						
What did you think of the X2 lecture?						
What did you think of the X3 lecture?						
What did you think of the X4 lecture?						
What did you think of the X5 lecture?						
What did you think of the XX1 exercise?						
What did you think of the XX2 exercise?						
What did you think of the XX3 exercise?						
What did you think of the XX4 exercise?						
What did you think of the XX5 exercise?						

Please give written comments that will help us to improve the course (one comment per row below)

Appendix E. Photos of RadoNorm training courses

InterRad 2024, BfS

RATH course 2025

Radon Measurement 2025, SURO