EUROPEAN ALARA NETWORK

NEWSLETTER

44th ISSUE • NOVEMBER 2020

In this time of pandemic, nothing better than reading to open your mind

"*Reading is like drinking and feeding.*
The mind who does not read is a body which does not eat"
Victor HUGO (1802-1885).

Clearing your head is the very objective of this 44th issue of the EAN Newsletter. We would like to bring you some "down-to-Earth" information about the **new regulation for the protection against radon at the workplace** in France and how to implement it in practice.

Then, this article is followed by more "higher" reflections on **the Art of Reasonableness** coming from NEA workshop. Then we make an excursion into Radiation Protection Research with a **European Joint Programme Roadmap of CONCERT.**

We will finally bring you (for short) in the hospital to present **good practices using shielding on patients for diagnostic radiology applications.**

The EAN Newsletter Editorial Board. –
Sylvain Andresz, Julie Morgan, Fernand Vermeersch and Pascal Croüail

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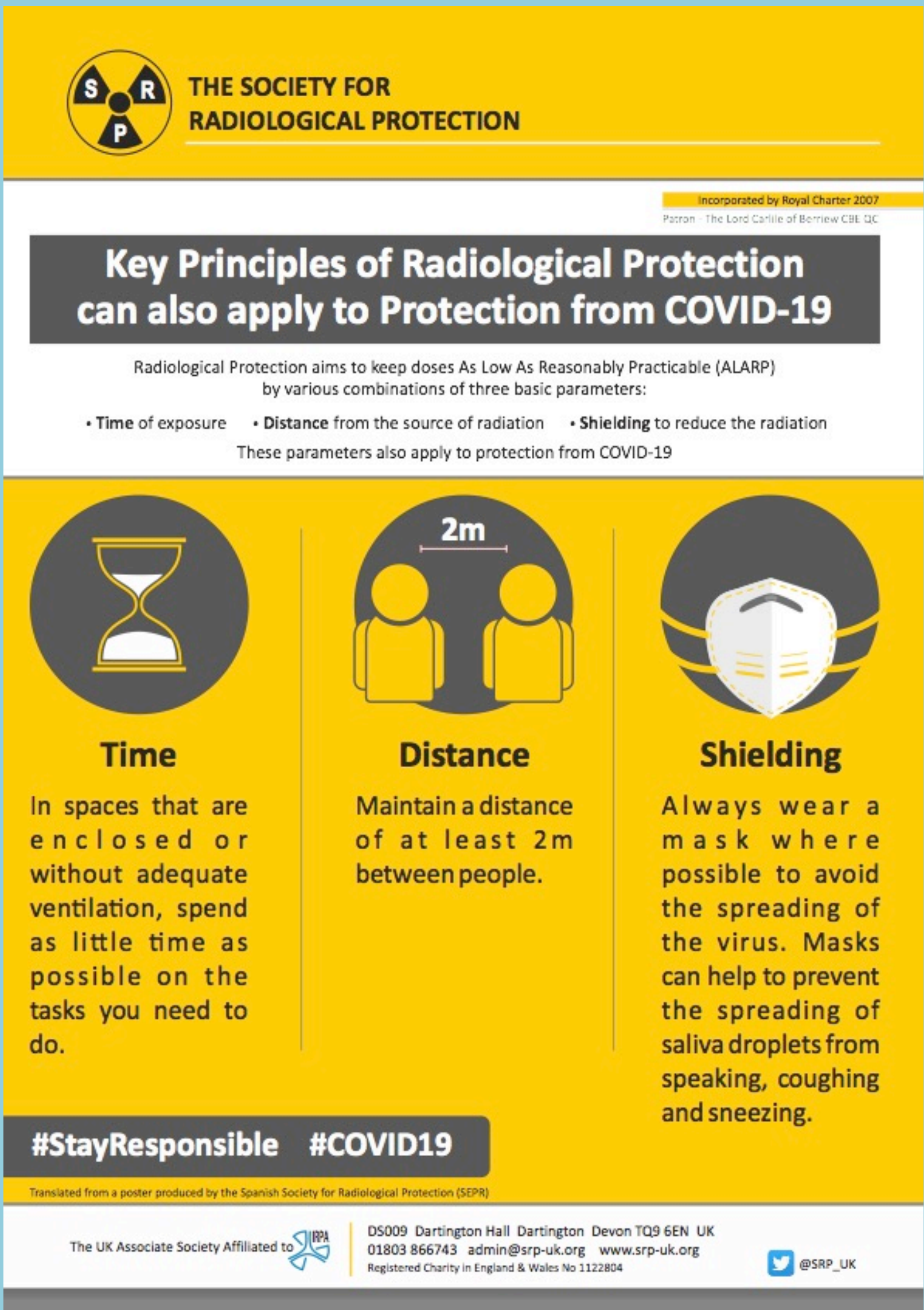

Poster available for free at the Society for Radiological Protection (SRP, United Kingdom) and based on a version provided by the Spanish Society for Radiation Protection (JEPR, Spain)

New regulation for the protection against radon at work

A practical guide addressed to employers

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N.B. This article is a summary of the guide addressed to the employer published in October 2020 by the French Minister of Labour and Employment following the work of the dedicated Working Group coordinated by Mr. Michel-Dit-Laboelle

Link to the guide (in French): https://travail-emploi.gouv.fr/IMG/pdf/guide_dgt_-_prevention_du_risque_radon_-_edition2020.pdf

Context

Since 1987, radon gas is classified a carcinogenic for the lung by International Agency for Research on Cancer (IARC). The combined exposure from radon and tobacco significantly increase the risk of cancer. In France, radon is regarded as the 2nd cause of lung cancer (after tobacco). According to recent results[1], around 3,000 deaths/year in France are associated to radon, and these represent 10% of the deaths from lung cancer.

For the French population, radon is the primary source of exposure to natural ionizing radiations. In 2018, the 2018-437 Decree *Protection of Workers against the Risk from Ionizing Radiation* was published and integrated in the Labour Code (articles R.4451-1 and followings) and also in the Public Health Code (articles L.1333-22). Radon gas is considered a potential workplace hazard and should be managed as such.

The Decree requests employers to proceed to a radon-risk evaluation at the workplace; at least for workplaces located on the underground or ground-level (art. R. 4451-1) and also in specific workplaces (R.4451-4) such as cavities, mines, caves, dams, sewers, tunnels etc.
The management of radon can be performed in a simple and efficient manner within the framework of the management of occupational risks and with the global aim of ensuring safety at work (L. 4121-1). If radon measurements are above the reference level of 300 Bq/m^3 (annual average radon concentration), the Decree requests the employer implement suitable mitigation actions. An enhanced protection framework shall be implemented in specific cases (nonetheless, the objective is to take the necessary measures to avoid this being necessary).

The Decree applies for existing workplaces, and it emphasizes that radon should be taken into account at the construction and buying/renting stages of workplaces. Indeed, it is often more efficient to solve potential radon issues at these stages rather than once the buildings are occupied.

The protection framework

According to the Decree, all employers are requested to complete a radon-risk evaluation for all workplaces located on the underground or ground-level (art. R. 4451-1) and also in specific workplaces (listed in R.4451-4) such as cavities, mines, dams, sewers, tunnels etc. It is recommended to proceed to a radon-risk evaluation for areas located on the first floor if measurements indicate the reference level has been exceeded at levels below.

1st step. Documentary analysis

The radon-risk evaluation shall start with a *documentary analysis*. The documentary analysis could use the following sources:

1 [1] Ajrouche R, Roudier C, Cléro E, Ielsch G, Gay D, Guillevic J, Marant Micallef C, Vacquier B, LeTertre A, Laurier ; D. *Quantitative Health Impact of indoor radon in France*; Radiat Environ Biophys. ; 2018.

1. **The map of the 'radon potential'** of the ground published on-line by the Radiation Protection and Nuclear Safety Institute (IRSN)[2]. The scale of the map is the *commune* (a French district) and each commune is given a radon potential level (3 levels are possible, based on geological considerations and past radon measurements).

- In "zone 1", it is generally not necessary to implement radon measurement.
- In "zone 2" it is recommended to gain a closer view on the local geological conditions by using the cadaster, geo-risk governmental database …).
- In "zone 3", it is recommended to make radon measurement.

In zone 3, a greater proportion of buildings have the potential to encounter radon concentrations above the reference level. Whilst, it is possible for buildings in "zone 1" and "zone 2"to exceed the reference level, it is seen less frequently.

2. **The construction qualities** of the building for limiting the buildup of radon gas shall be considered. The air tightness and the ventilation system are the main parameters because they can influence the entry of radon and its accumulation.
3. **The type of work and the conditions at the workplace** are other important parameters. Some workplaces operate with specific conditions such as air containment, heat source, underground water, variation of pressure or no ventilation (such as mushroom fields).

   N.B. From a regulatory point of view, there is a difference between *the specific workplaces* (cavities, mines, caves etc. listed in R.4451-4) and *specific places at work* with regard to radon as described in 3.

4. Finally, the documentary analysis shall also take into consideration **former radon measurements**, and notably measurements performed in some public buildings for which the regulatory requirements for radon are older.

   N.B. It is not recommended to base the radon risk evaluation on radon measurements made in other buildings in the vicinity. Indeed, each building has its specificities with regard to radon and could be regarded as a unique case. If radon measurements performed in other buildings in the vicinity are above the reference level, they should then be taken into consideration.

The results of the documentary analysis will help the employer to conclude if the radon reference level can be exceeded – or not – and to go to the 2nd step (radon measurement) – or not. In doubtful situation, it is recommended to move to the 2nd step anyway.

The results of the documentary analysis shall be recorded by the employer and made available on request from the State representatives such as the Health and Safety Inspectorate or Nuclear Safety Authority.

For workplaces built after 2018, it is recommended to take radon into account at the building stage. However, there are no requirements, building rules or label against radon in France. The existing Environmental High Quality label (optional) that set up objectives and rules in terms of air tightness, soil-building interface and ventilation may be incidentally efficient for indoor air quality.

> "Radon can and shall be managed the same way as the other occupational risks. Radon shall not be seen as an exception that can be managed by professionals with expertise skills"
>
> Nicolas Michel

2nd step.
Radon measurement

If the results of the documentary analysis conclude that the radon reference level can be exceeded, the employer is required to perform radon measurement.

[2] https://www.irsn.fr/FR/connaissances/Environnement/expertises-radioactivite-naturelle/radon/Pages/5-cartographie-potentiel-radon-commune.aspx#.X6qTNi17R24

Methodology for measurement

The radon concentration is usually measured by using integrating devices and long-term measurements. In France, the Solid Track Nuclear Detector (STND) are of standard use.
The STDN devices are cheap and easy to use (cf. the instruction notice of the laboratory). The calculated results provided by a STDN integrating during a 2 to 3 months period can be legitimately compared with the reference level of 300 Bq/m^3 (which is defined in terms of an "annual average radon concentration").

The radon concentration varies significantly with environmental and meteorological factors and it is recommended to perform measurements with STDN during the colder months (October to April in France) when windows are more often shut and the heating system working. But the conditions at the workplaces are also important factors. For example, it is recommended to perform radon measurement during the colder months and also during the hotter months for workplaces located deep underground (radon concentration might not be related to the outside temperature). The conditions of the measurements shall be representative of the conditions when workers are present: it is not appropriate to make radon measurements when there is nobody present (e.g. a building closed during the winter period).

Granite stone that contain uranium has the potential to emit radon

A good practice is to use one STND every 200 m^2 and/or every 500 meters in galleries but this need to be adapted with the total surface, the number of rooms, the number of specific places at the workplaces, the actual presence of workers etc. Globally the idea is to use one STND for one "representative workplace" with regard to

- its location,
- the environnemental condition (pressure, etc.)
- and the work (activities, presence etc.)

In practice, the employer can buy STDN and proceed to the measurement (« self-measurement ») or contract a provider.

The results of radon measurement shall be recorded by the employer for 10 years and made available upon request from State representatives.

3rd step. Radon mitigation

The action for radon mitigation should be commensurate with the results of radon measurement. The regulatory requirements vary dependent on the assessed radon concentration. In all cases, it is important to carefully assess the situation first before implementing the radon mitigation actions.

If one radon measurement is above the reference level and below 1,000 Bq/m^3

In these cases, « *simple mitigation* » actions shall be implemented in the first instance such as:

- Checking the ventilation system and ensuring that the regulatory requirements with regard to air renewal are met already (cf. R. 4222-1 of the Labour Code). Evident malfunction and dysfunction (cleaning the vent, system voluntarily shut down) shall be corrected.
- Improving the air tightness of the soil-building interface and closing all the entry points and channels that radon can use.
- Improving the natural aeration of the place (where possible).

The implementation of simple mitigation actions is generally sufficient to decrease the radon concentration below the reference level. These simple mitigation actions can be implemented quickly and with limited cost by the employer himself, its technical services or a building professional (ideally the building professional is informed about radon).

If one radon measurement is above 1,000 Bq/m³

In this case, the mitigation actions shall be implemented quickly as the radon concentration is elevated (exceeding several thousands of Bq/m³). Indeed the dose limit of 20 mSv/year (effective dose) applies to all sources of ionizing radiation, radon included. So the dose of a worker exposed to a radon concentration in the range of several thousands of Bq/m³ has the potential to reach the dose limit.

Because a risk at work has been identified, the employer is requested to inform the workers and working arrangements will probably have to be modified: such as limiting the frequency of access and duration of access prior to the completion of a technical diagnosis and the implementation of mitigation actions.

For radon concentrations > 1,000 Bq/m³ in complex situations, is it indeed recommended to proceed to a **technical diagnosis of the building** by requesting the services of an expert in this field[3].

The diagnosis follows a pre-defined grid with the aim of collecting:

- general information about the building: age, surface and size, former renovation works etc.
- a description of the soil-building interface and the identification of the potential entry point of radon,
- a description of the ventilation system, identification of the places with poor air renewal,
- and information about the equipment that might influence radon concentration (type of heating system, air conditioning, …)

It is recommended to complement the technical diagnosis with **additional radon measurements** performed by a professional with expertise in the field[4]. The additional measurements are aiming to confirm the results of the technical diagnosis and the identification of the radon entry points and channels. These professionals are using specific devices such as continuous radon monitoring systems.

The technical diagnosis and the additional measurements will provide an extensive view of the radon situation and support the definition of the mitigation actions. In general, the mitigation actions cannot be implemented by the employer/its technical services and it is better to request the services of a building professionals with training/experience in radon[5].

The impacts of the mitigation shall be assessed, notably with regard to their influence on the building (ex. thermal efficiency) and the work (ex. ventilation is not an option in some working places). A cost-advantage and multi-criteria analysis can help classify and compare the offered mitigation actions.

4th Step
An enhanced framework

In the case where the reference level is still exceeded after the implementation of mitigation action (or when the mitigation measure(s) cannot be implemented), the employer is requested to

1. Inform the IRSN about the results of the measurements (R. 4451-17)
2. Identify the « *radon area* » that is to say the places where the calculated radon exposure is ≥ 6 mSv considering a time of exposure of 2 000 h/year (R. 4451-22).
3. Identify the area(s) where the radon concentration is above the reference level but which are not classed as 'radon area(s)'.

If no radon area is identified, the employer shall implement a monitoring program of the radon concentration in these areas to assess the evolution of the radon concentration with time. Continuous monitoring devices or STND can be used in the monitoring program. If the air tightness or the ventilation of these areas is modified, new radon measurement shall be implemented.

If one "radon area" is identified, the enhanced framework for radiation protection will apply. The employer shall document and implement a radiation protection program and designate a Radiation Protection Advisor to assist him in the implementation of the program.

The Radiation Protection Advisor can be an employee with competence in radiation protection[6]; an

[3] A list of professionals with this expertise is provided by the Nuclear Safety Authority

[4] A list is also provided by the Nuclear Safety Authority. N.B. The professional who performed the radon measurement shall be different from the professional who performed the technical diagnosis and propose the mitigation actions.

[5] There is no list of building professionals available.

[6] PCR level 1 - natural radiation" or "PCR-level 2 unsealed sources" according to the French radiation protection training system

organization with competence in radiation protection or a "pool" (group)of competence in radiation protection, generally located in a nuclear installation.

The following items are included in the enhanced framework:

1. The designation of a Radiation Protection Advisor (this is a pre-requisite, so the following can be implemented);
2. The delineation of the radon area and the definition of the conditions required for access to the radon area (authorization),
3. The evaluation of the individual exposure of the workers who access a radon area,
4. The elaboration and giving of information/training addressed to the worker who accesses a radon area. The topics of the training are general information about radon, the mitigation measures, the monitoring program etc.
5. The surveillance of the radon area by the means of regular measurement (RT. 4451-45),

The delineation of radon area.
All techniques (STND, continuous monitoring or punctual measurements) can be used for the delineation of the radon area. In general, the measurements shall be extensive (other room, other places) so as to find the boundaries of the radon area. These measurements are the opportunity to collect more information about the conditions such as the presence of dust, the true equilibrium factor F etc.

No normative warning signage exists for radon area. For now, the signage shall be compliant with the general requirements for safety and security signage. An example of such signage is presented here.

Example of signage for radon area.

To avoid misunderstanding, it is possible to write "radon" in full rather then using the Mendeleyev symbol as requested by the general requirements for safety and security signage).

An **individual dose exposure evaluation** shall be performed prior to all access to a radon area. The objective of the individual dose exposure evaluation is to decide if the worker is considered as "*exposed to radon risk*" or not. The worker is considered as "exposed to radon risk" if his/her individual dose is ≥ 6 mSv/y when working in radon areas.

For this, the Radiation Protection Advisor should assess T_i the duration of exposure in the radon areas (in h) (this could be related to one or several radon areas at the work) and C_i the radon concentration in these area(s) (in Bq/m^3). The evaluation of the individual exposure E (in mSv) is then performed with the usual formula:

$$E = \sum_i (T_i \times C_i \times DC)$$

Where DC is the Dose Conversion factor for radon which is $3.11.10^{-6}$ $mSv/Bq.h.m^3$ for workplace with standard ventilation and an equilibrium factor F = 0.4.
For workplaces with no standard ventilation and/or F ≠ 0.4 and/or for a more extensive evaluation, it is better to use the measurement of Potential Alpha Energy (PAE, in $J.Bq^{-1}$) and the following formula:

$$E = \sum_i (EAP_i \times F \times CF)$$

Where CF is the Conversion Factor for radon which is 1,4 Sv per $J.h.m^{-3}$ cf. 1st September 2003 Decree, which is line the Conversion Factor stated in ICRP 65.

By using the above formula and coefficients, a "radon area" can be defined as a workplace where the radon concentration is around 1000 $Bq.m^{-3}$ (assuming an annual occupancy of 2000 h and F = 0,4).

If a worker is considered as exposed to radon risk, the following items (enhanced framework) apply:

1. Training about radon, radon risks, monitoring program etc. cf. shall be given to him/her and repeated at least every 3 years.
2. His/her individual exposure from radon is under surveillance (R. 4451-64) by the Radiation Protection Advisor.

3. An enhanced medical monitoring of their health status is performed by the medical staff.

The modalities for the surveillance of the individual exposure are not prescribed. It could be performed by using a STND located at the workplace, a continuous monitoring device (this technique is not available in France) or a device measuring the PAE[7]. Consideration about the evolution of radon concentration, the equilibrium factor and other conditions at the workplace (exposure time and period, humidity etc.) will help the Radiation Protection Advisor decide which technique is the most suitable for the surveillance of individual exposure of the workers. The individual doses shall be transmitted to the IRSN for inclusion in the national dosimetric database (SISERI) (R. 4451-66).

The enhanced medical monitoring is performed by the medical staff (Health Physicist). The employer, the Radiation Protection Advisor and the Health Physicist should exchange information to set up the requested Enhanced Individual (medical) Monitoring (or SIR in French) with the following items:

1. A specific medical file, to be kept until the worker reached the age of 75 and/or 50 years after the end of the exposure,
2. An interview to be performed 2 years after the workers has taken his/her position.

The medical staff should be aware of the situations that may lead to an increase in the risk of exposure such as the other conditions at the workplace (dust, fume, chemical products, …) and the personal behavior (tobacco consumption, radon at home, …) so that adequate advice can be provided to workers. Employers must ensure that pregnant women and young workers (between 15 and 18 years old) should not be exposed to radon risk.

> “It is generally easy to reduce radon concentration below the reference level to avoid entering the enhanced protection framework”
>
> Nicolas Michel

Conclusion

The protection against radon exposure at work can be achieved in a simple and efficient manner following the existing framework for the management of health and safety at work. If it is considered necessary to perform radon measurements (following documentary analysis) and if the radon measurements are above the national reference level, the employers shall implement the necessary measures. This should avoid the need to apply the enhanced framework of protection (which brings more constraints) providing the mitigation actions are successful. Simple mitigation actions, and if needed more complex mitigation actions supported by a technical diagnosis of the building, and/or additional measurement should help solve radon issues in the large majority of cases.

It is also recommended that radon is taken into account at the construction stage where radon mitigation is even more efficient and less costly.

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[7] which basically works like a STND but with an active system – the device should be used for a recommended period of 3 months, and then replaced.

Optimization: Rethinking the Art of Reasonableness.

Edward LAZO,

Deputy Head, Radiological Protection and Human Aspects of Nuclear Safety Division
OECD Nuclear Energy Agency

The optimization of protection, to keep radiological exposures As Low As Reasonably Achievable (ALARA) taking into account social and economic circumstances, has been central to radiological protection for decades. However, because of scientific uncertainty in understanding the biological effects of low doses of ionizing radiation on human beings, other living creatures, and ecosystems, and due to gaps in our knowledge of how ionizing radiation might act on cell, tissue and whole organism biological functioning, precaution in regulation and application sometimes means that minimization of dose has been substituted for a robust optimization process. The objective of this workshop was to discuss the nature and intention of optimization of radiological protection, and to see how reasonableness should be interpreted and applied in practice.

While radiological protection optimization is explicitly defined in international recommendations and requirements, its implementation in regulation and application remains quite varied. Workshop presentations and discussions showed that the objective of optimization of radiological protection can be interpreted differently depending on the situation causing the need to consider radiological protection options. For example, optimization of radiological protection in the context of a deep geologic disposal site will address choosing containers and a site geology to manage exposures in tens of thousands of years, while optimization of radiological protection addressing exposure to domestic radon will consider influencing personal behavior. Such differences can promote a perceived image of uncertainty and lack of knowledge. These, combined with incomplete scientific knowledge often result in radiological protection choices taking significant levels of precaution, to the extent of minimizing exposures.

However, minimization of radiological exposure is not the optimization of radiological protection, because social and economic aspects should be taken into account. More importantly, situations causing the need to consider radiological protection options will generally be complex, multi-disciplinary, and multi-dimensional. Radiological risks will be only one of many different risks caused by the situation under consideration, and by the protection options being considered. Optimization and reasonableness are informed by the scientific understanding of the risks involved, but are case-specific, stakeholder dependent, circumstance driven judgements. By broadening the risk aspects being considered, beyond those caused by exposure to ionizing radiation, the nature of the objective of optimization of protection can evolve beyond the optimization of radiological protection to the optimization of well-being. To facilitate this evolution, the focus of the workshop was protection addressing well-being in the broadest sense. Thus it is important to recognize that radiological protection is only one factor that should be considered when optimizing overall well-being, and may, in fact focus efforts on radiological health risks to the detriment of other risks. In contrast, the goal of, optimizing well-being can focus overall protection solutions on the most serious issues, allocating resources in a more risk-prioritized fashion. This conclusion is consistent with several other reports

> “The optimal protection solution should be selected based on a broad understanding of the prevailing circumstances – **the big picture**”
>
> Edward Lazo

and workshops organized through the NEA8,

8 Challenges in Nuclear and Radiological Legacy Management; NEA#7419; http://www.oecd-nea.org/rp/pubs/2019/7419-eglm.pdf Management of Radioactive Waste after a Nuclear Power Plant Accident; NEA#7305; http://www.oecd-nea.org/rwm/pubs/2016/7305-mgmt-rwm-npp-2016.pdf

NEA Workshop on Optimization: Rethinking the Art of Reasonable, 13-15 January 2020

The workshop was attended by 86 experts from 22 countries, representing a wide diversity of nuclear and non-nuclear industries, and medical disciplines and communities (e.g. radiological protection, nuclear regulation, risk research, industrial application, waste management, non-governmental organizations, etc). Broadly, attendees agreed that

prevailing circumstances causing radiological and other risks / hazards are complex, multi-dimensional, and multi-disciplinary. The optimal protection solution should be selected based on a broad understanding of the prevailing circumstances – **the big picture** - and of the positive and negative consequences of each protection solution considered. Such a holistic approach, considering radiological, economic, societal, lifestyle, etc. aspects, was felt to be the most likely to optimise the well-being of populations directly and indirectly affected by circumstances and protection decisions.

This is broadly in line with the current recommendations of the ICRP, as documented in ICRP 103, but emphasizes the multi-disciplinary, multi-dimensional nature of the complex circumstances to consider. It should therefore be expressed more clearly that: radiological issues may be only a small part of the overall risk vector; the complexity of such circumstances will generally require multi-disciplinary input in order to identify the overall protection solution that delivers the best level of well-being; and that tools are needed to appropriately balance approaches to managing diverse risks.

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Towards an All-Hazards Approach to Emergency Preparedness and Response: Lessons Learnt from Non-Nuclear Events; NEA#7308; http://www.oecd-nea.org/rp/pubs/2018/7308-all-hazards-epr.pdf

The joint roadmap for Radiation Protection Research:

State of the art

Nathalie IMPENS

SCK•CEN
Mol, BELGIUM

Situation & role of the joint roadmap in the radiation protection system

The joint roadmap for radiation protection research presents research challenges in the context of existing and potential exposure scenarios that are relevant from the point of view of society. The joint roadmap has been established in the framework of the European Joint Program CONCERT in H2020 by a multidisciplinary working group including representatives of the European Radiation Protection Platforms. Many stakeholders were involved to ensure that the proposed program responds to societal needs. The link to the joint roadmap is https://www.concert-h2020.eu/Document.ashx?dt=web&file=/Lists/Deliverables/Attachments/206/D3.7_Second%20joint%20roadmap_draft_reviewed_%20052020_approved03062020.pdf&guid=01b5ac77-b2ec-4cda-9c98-917dba396f0f.

The Joint Roadmap is a living document and future research prioritization will be driven by evolving research and innovation, and by the future needs in the radiation protection system: Radiation protection research is needed in every step of the radiation protection knowledge updating process, ranging from underpinning science to principles, to recommendations, standards and practice. The role of science in the continuous process of development and application of the radiation protection system is presented in Figure 1.
Radiation protection research aims to support the development of improved risk assessment and risk management, through technological innovations. The regulators and competent authorities as well as radiation protection practitioners rely directly or indirectly on the output from the research and technological development processes (Figure 2).

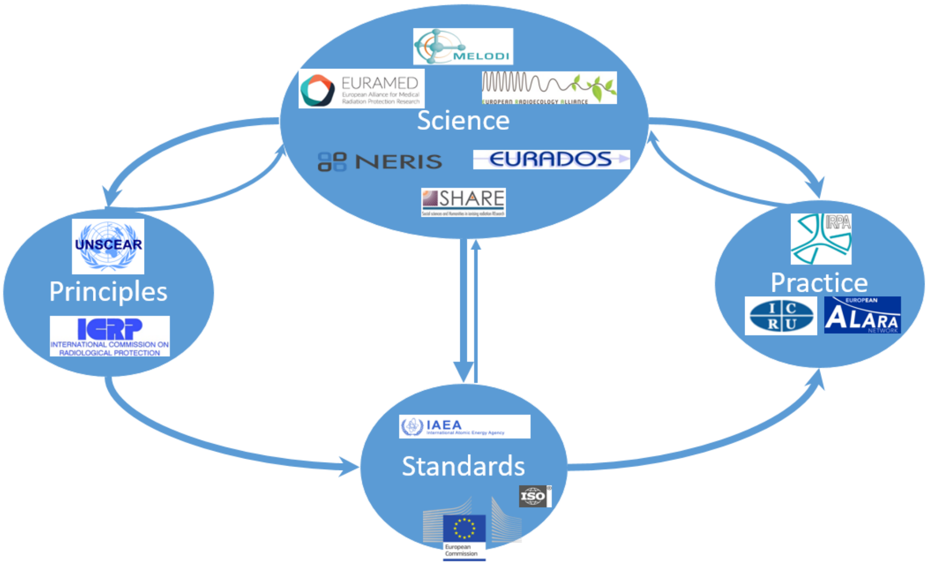
First steps towards the implementation of the joint roadmap

To implement the joint roadmap there is a need for concertation of the efforts and resources available in the member state and the many institutes, universities, hospitals and even companies. These entities at national level provide a great deal of expertise in the many fields of radiation protection research, and they possess the necessary tools and infrastructure.

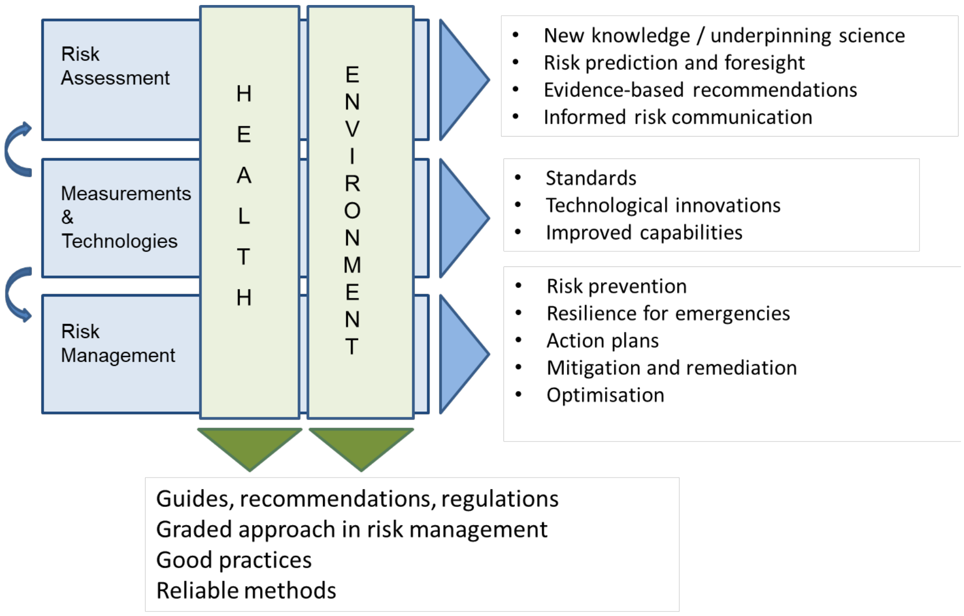
The concept of EJP CONCERT proved to be adequate to establish concerted actions in radiation protection research through research calls and projects. A similar co-fund partnership under Horizon Europe is suggested to ascertain implementation of the joint roadmap. A global approach may further improve the research outcome and efficient use of research resources. International collaboration initiatives will be essential for mutual support and identification of needs and opportunities for harmonization actions and common development. To maximize effectiveness, the research results must be disseminated and communicated in the right way, aimed at the target groups (end users) in the radiation protection system (Figure 1). Education and training and feeding regulation are examples of ways to leverage the translation of research into practical radiation protection.

Cross-fertilisation between Euratom and Horizon Europe

Radiation protection research has always been an important aspect of Euratom. Yet, the joint roadmap shows many links to other research disciplines. Interaction with relevant clusters will result in cross-fertilization within Horizon Europe. Important fields where cross-fertilization could be effective are priorities related to, amongst others, health, environment, climate and digitalization ■.



Role of science in the continuous process of development and application of the radiation protection system



Radiation protection research aims to support the development of improved measurement and technologies, risk assessment, and in risk management for improved radiation protection of human health and the environment.

Guidance on using shielding on patients for diagnostic radiology applications

A joint report of the British Institute of Radiology, Institute of Physics and Engineering in Medicine, Public Health England, Royal College of Radiologists, Society and College of Radiographers and Society for Radiological Protection

Over the last 70 years or so, it has been a common practice amongst radiological professionals to place radiation protective material directly on the surface of a patient during radiodiagnostic procedures to help reduce the dose to critical organs. This has led to the expectation amongst patients and professionals alike that this would continue. However, an increasing number of studies have raised concerns regarding the efficacy and effectiveness of such 'contact shielding'. This has led to an inconsistency in application and, in some cases, friction between patients demanding shielding and professionals judging it is unnecessary or even potentially harmful.

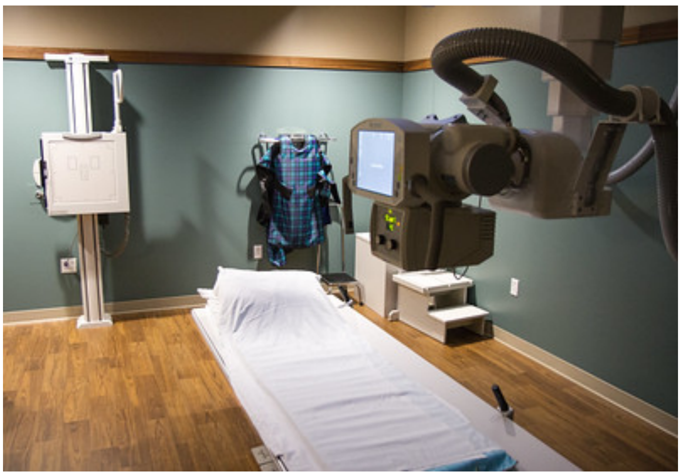
Therefore, a working party consisting of representatives from various UK radiological professional bodies was established to consider the evidence-base for patient contact shielding and produce a consensus of opinion as to what constitutes best and agreed practice, with the aim of improving consistency in application of such shielding.

This work challenges the historical perspective that using contact shielding only provides a benefit for the patient. Rather it suggests that contact shielding can adversely interfere with the imaging (leading to a repeat test) and, if misplaced or allowed to move during an examination, can actually lead to increased patient radiation exposure, rather than the reverse. Overall, the findings suggest that contact shielding provides minimal or no benefit and professionals should concentrate on other areas of radiation protection which are more effective in optimising the patient radiation exposure.

The recommended cessation of the widespread practice of applying patient contact shielding requires a major cultural change in outlook regarding radiation safety and practice amongst medical professionals, educators, regulators and the public alike. The adoption of these guidelines into clinical practice will therefore also require a suitable education programme which could incorporate some of the material provided here.

A full copy of the guidance and an A4-sized patient information sheet can be downloaded for free at www.bir.org.uk/patientshielding. ■

BIR The British Institute of Radiology



Holy Family Memorial lakefront Campus, Two Rivers, Wisconsin, From Lester Public Library at Flickr

Lorem Ipsum

Trenz Pruca

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Events on ALARA and Radiation Protection

IRPA 15 will be an “**hybrid event**”. The offline congress of hybrid IRPA15 will be held for two days on 18-19 January 2021 in COEX, Seoul, Korea while the virtual congress for both local and international attendees will run a further extended period for three weeks, aiming to bring out the hope and solidarity within the RP global community. New registration fees have been issued.

IRPA 15 website: https://www.irpa2020.org

The French Society for Radiation Protection is **making its switch toward the virtual world**. The e-PCR congress will be held 24 & 25 November with the objectives of providing to the participants the latest changes in radiation protection regulation in France and allow rooms for exchanges and debates between the participants.
The following features have been embedded in this 1st of its kind congress for SFRP, so the participants can:

- download the pre-recorded presentations on changes in regulation provided by the Institutions;
- send their questions to the Speakers prior to the congress;
- access the 2 live round tables which gather the Speakers (2 hours);
- Access the virtual technical exhibit and make an appointment with a provider/manufacture;
- Access a video library: workshop, tool show, methods and devices, …
- and a library with written documents.

Congress website:
https://www.sfrp.asso.fr/manifestations/manifestations/douziemes-rencontres-des-personnes-competentes-en-radioprotection.html,9,38,0,0,3247

ETRAP 2021 will be held from 23 to 26 March 2021 as a virtual conference on an online platform.
This conference is organized by the Belgian Nuclear Research Centre SCK CEN and the University of Groningen, in collaboration with EUTERP, IRPA and IAEA.
The call for abstracts has just been issued:
https://www.etrap.net/

The theme is **Education and Training in radiation protection in a virtual setting** - challenges and opportunities. The COVID-19 pandemic has boosted the use of tools for online teaching; what is working, what is not? During this conference we are looking forward to sharing best practices.
Submit your abstract now, **the deadline for which is 18 December 2020**.

■


Virtual congress as a new standard!

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