EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY

DIRECTORATE D – Nuclear Energy, Safety and ITER
Radiation Protection and Nuclear Safety

Meeting of the Group of Experts established under Article 31 of the Euratom Treaty

Luxembourg, 29-30 November 2022

SUMMARY REPORT

(Approved by the Group of Experts at the meeting 28-29 June 2023)

INTRODUCTION

The meeting was attended by 37 out of 47 members of the Group, representatives from observers (ICRP, IAEA, WHO, NEA, HERCA, IRPA, Norway, Switzerland and UK), and representatives from DG SANTE, DG RTD, and DG ENER. External experts were also invited to present the findings of the EIVIC and EU-RAP studies (ref. agenda items 5 and 6.1). The EU Scientific Seminar 2022 on *Radiological protection considerations for fusion reactors* was held in the afternoon of 29 November 2022 and gathered more than 80 participants.

The Chair opened the meeting, and the Head of Unit ENER D3 Radiation protection and nuclear safety welcomed the participants.

The Secretariat provided the Group of Experts with administrative information, informed about apologies received, and updated on membership issues. Since the last Group of Experts plenary, one member from Germany and one from Netherlands resigned, and the successor of the member from Germany has already been appointed to the group.

1. APPROVAL OF THE AGENDA

The draft Agenda was adopted without amendments.

2. APPROVAL OF THE SUMMARY REPORT OF THE WEBEX MEETING HELD ON 17 MAY 2022

The Summary Report of the meeting held online on 17 May 2022 was approved without amendments and is published on the Europa website[1].

[1] The approved Summary Reports of the May 2022 meeting can be found under Group of experts (europa.eu)

3. UPDATE BY THE COMMISSION ON ACTIVITIES RELATED TO THE WAR IN UKRAINE

During the meeting on 17 May 2022, the Commission had presented its support activities to Ukraine in the field of nuclear safety and radiation protection.

At this meeting, the Commission (Head of Unit ENER-D3) updated the experts on the impact of the war on the nuclear installations in Ukraine, and on the continuing Commission activities to provide support to Ukraine based on close cooperation between DG ENER, the EU Civil Protection Mechanism, DG International Partnerships, the DG Joint Research Centre, and the European External Action Service. In this context, he addressed support under European Civil Protection and Humanitarian Aid Operations, under the Instrument for Nuclear Safety Cooperation in Ukraine, in the area of Emergency Preparedness and Response, as well as cooperation with regulators (through ENSREG, WENRA and HERCA).

In the discussion that followed, the experts expressed interest on specific topics (e.g. modelling calculations, preparedness in terms of communication strategies, and possibilities of Ukraine to be represented as observer to the Article 31 Group of Experts), as well as sharing activities of their organisations in a similar context. The IAEA representative shared updates of their activities and missions in Ukraine to ensure nuclear and radiation safety. The ICRP representative informed that ICRP opened its Publication 146[2] to public access, and published advice for the public on protection in case of a nuclear detonation.

Updates on Euratom Directives:

In addition, the ENER representative provided some general updates on the activities related to the Basic Safety Standards Directive, the Nuclear Safety Directive and the Drinking Water Directive.

4. ENVIRONMENTAL RADIOACTIVITY MONITORING - LATEST DEVELOPMENTS

The Commission (DG ENER) presented the main findings and recommendations of the study on the Inventory of EU Members States environmental radioactivity monitoring systems. The representative also presented the online database developed during the study containing the collected information on the national arrangements for environmental radioactivity monitoring in all EU MS. This database is expected to support the Commission in its future verifications in the frame of the Article 35 of the Euratom Treaty. In the discussion that followed, an expert raised the question of whether a revision of the Commission Recommendation 2000/473/Euratom[3] is being considered. The Commission has received no such request by MSs.

Finally, the ENER representative presented the new website of the European Radiological Data Exchange Platform (EURDEP).

The Group of Experts appreciated the presentation and took note of the developments.

[2] ICRP Publication 146: Radiological Protection of People and the Environment in the Event of a Large Nuclear Accident

[3] Commission recommendation of 8 June 2000 on the application of Article 36 of the Euratom Treaty concerning the monitoring of the levels of radioactivity in the environment for the purpose of assessing the exposure of the population as a whole

5. EUROPEAN INTERLABORATORY COMPARISON ON WHOLE BODY COUNTING (EIVIC)

Two representatives of the EIVIC consortium presented the main findings and conclusions of the study on European Interlaboratory Comparison on Whole Body Counting. When finalised, the publishable report of the study will be submitted to the Article 31 Group of Experts for review and approval for publication in the Radiation Protection Series of the European Commission.

The experts appreciated the presentation and took note of the developments. In the discussion that followed, the experts noted the added value of building an experts' network to support cooperation on whole body counting and acknowledged work and network of the internal dosimetry group of EURADOS.

6. NATURAL RADIATION SOURCES

6.1. Study "Review and evaluation of national radon action plans established in EU Member States according to the requirements in Council Directive 2013/59/Euratom focusing on the practical implementation of the actions defined in these action plans" (EU-RAP)

Two representatives of the EU-RAP consortium presented the main findings and conclusions of the study on national radon action plans.

The experts appreciated the presentation and took note of the developments. When finalised, the publishable report of the study will be submitted to the Article 31 Group of Experts for review and approval for publication in the Radiation Protection Series of the European Commission.

6.2. Progress report of the Working Party on exposure to natural sources of ionising radiation (WP NAT)

The Chair of the Working Party on Natural Radiation Sources (WP NAT) informed the experts on the presentation she gave on the report RP193 on Radon in workplaces[4] at the IAEA International Conference on Occupational Radiation Protection in September 2022. Together with the Secretariat of the Working Party, they updated the Group of Experts on the work and outlook for the further development of the draft report on "Building materials", initiated by the WP NAT during its previous term, which is expected to be completed by June 2023. The report aims to support implementation of the respective BSS requirements while addressing links with the construction products regulation (Regulation (EU) No 305/2011) and with a relevant initiative of CEN CENELEC.

The Group of Experts took note of the progress made. In the discussion that followed, the experts shared relevant information from their national context. At European level, an expert informed that JRC is preparing a proficiency test for gamma radioactivity measurements in building materials, in the framework of the CEN standard for such measurements and respective dose calculations for exposure to gamma radiation emitted from building materials which is under development. The expert informed also that a topical session on non-food commodities was organised by IAEA within the last RASSC meeting.

[4] RP193 Radon in workplaces - Implementing the requirements in Council Directive 2013/59/Euratom

7. TOPICAL SESSION: DOSE COEFFICIENTS FOR OCCUPATIONAL EXPOSURE

7.1. New ICRP set of dose coefficients for occupational exposure

The ICRP Chair presented the recently completed series of five ICRP publications with new dose coefficients for internal occupational exposure[5]. The coefficients have taken into account latest scientific developments, namely revised radioactive decay data (ICRP 107, 2008), reference phantoms based on reference man model (ICRP 110, 2009), new data on skeletal dosimetry (ICRP 116, 2010), new concept of dose per activity content in a given organ and revised biokinetic models, as well as the latest recommendations of ICRP 103 (2007) in respect to weighting factors and the way effective dose is calculated, and the new philosophy of Radon management decision using a dosimetric approach (ICRP 115, 2009).

The Article 31 Group of Experts expressed their high appreciation for the presentation. During the discussion, the experts were interested in the resulting changes in numerical values, uncertainties, discrepancies between dosimetric and epidemiological models in relation to health risk from Radon exposure, as well as potential impact of the ongoing revision of the ICRP general recommendations on dose coefficients in future. As ICRP is currently also revising dose coefficients for public exposure, an expert raised the need for considering communication campaigns regarding the expected changes.

7.2. Response to a questionnaire on adoption of the new dose coefficients for internal exposure by the Member States

An expert from Spain presented the results of a questionnaire on the status of adoption of the new dose coefficients for internal exposure by the EU MSs.

The Article 31 Group of Experts appreciated the presentation and thanked the expert for the undertaken survey and took note of the results.

7.3. Discussion of the Article 31 Group of Experts on the best way forward in light of the newly published dose coefficients for occupational exposure

The Commission (DG ENER) presented the issue. At the time of publication of the BSS Directive in 2014, ICRP had already published dose conversion coefficients for external exposure (in ICRP Publication 116) following the methodology lined out in ICRP Publication 103, and the use of these data were recommended by recital (10) of the BSS. However, dose coefficients for internal exposure were still to be updated (from ICRP Publication 119 consolidating dose coefficients based of ICRP Publication 60) to follow ICRP Publication 103. Anticipating this update, recital (11) of the BSS Directive calls for continued monitoring of scientific developments and expects the Commission to make recommendations on any updated values, relationships, and coefficients, including those for exposure to radon, taking relevant opinions of the Group of Experts into account.

With the completion of the series of ICRP Publications on Occupational Intakes of Radionuclides: Part 1 -5 (presented under agenda item 7.1), a full set of dose coefficients for internal occupational exposure is now available. In the light of these developments, the Commission invited the Article 31 Group of Experts to examine the scientific developments

[5] ICRP Publication 130 (2015), 134 (2016), 137 (2017), 141 (2019), 151 (2022)

regarding updated values, relationships, and coefficients since 2007, as presented by the ICRP in their series on Occupational Intakes of Radionuclides, and to advise the Commission on the future use of these values, relationships and coefficients, in the form of an Opinion.

In response to the Commission's request, the Article 31 Group of Experts discussed and established a Working Party on Dose Coefficients to work on a draft Opinion and present it to the full Group in their next plenary in June 2023. They also agreed on the membership and chair of the working party.

The ICRP Chair offered to ask the ICRP Task Group 95 for a summary of the major changes on Internal Dose Coefficients with a view to share the relevant information with the Group of Experts.

8. INTERNATIONAL DEVELOPMENTS IN RADIATION PROTECTION

8.1. Presentation by ICRP on the 6th International Symposium on the System of Radiological Protection (7-10 November 2022, Vancouver)

The ICRP Chair presented the main conclusions of the 6th International Symposium on the System of Radiological Protection which took place on 7 – 10 November 2022 in Vancouver. The symposium was another important step in the review of ICRP's general recommendations, which form the basis for the international system of radiological protection, aimed to be concluded in 2030. The symposium concluded in the ICRP's Vancouver Call for Action to strengthen expertise in radiological protection worldwide. In their ongoing revision of the system of radiological protection, ICRP is addressing about 20 building blocks in an equal number of task groups.

The Article 31 Group of Experts appreciated the presentation, took note of the developments, and expressed their interest to follow further developments.

8.2. Presentation by IAEA on the International Conference on Occupational Radiation Protection: Strengthening Radiation Protection of Workers – Twenty Years of Progress and the Way Forward (5 – 9 September 2022, Geneva)

A representative from IAEA presented the main conclusions of the third International Conference on Occupational Radiation Protection: Strengthening Radiation Protection of Workers- Twenty Years of Progress and the Way Forward (5 – 9 September 2022, Geneva), and future priorities. The follow up actions include an updated Call for Action on Occupational Radiation Exposure.

The Article 31 Group of Experts appreciated the presentation and took note of the developments.

8.3. Presentation on UNSCEAR's latest evaluation of occupational exposure to ionizing radiation (UNSCEAR 2020/2021 Report, annex D)

The Chair of UNSCEAR's Expert Group on Occupational Exposure presented their latest evaluation of occupational exposure to ionizing radiation (UNSCEAR 2020/2021 Report, Annex D). The evaluation concluded in an overall improvement of estimates of worldwide occupational exposure for the period 2010-2014, specifically for the sectors medical, civil aviation, and Nuclear Fuel Cycle.

The Article 31 Group of Experts took note of the developments and expressed their high appreciation for the comprehensive presentation.

8.4. Discussion of the Article 31 Group of Experts on a working method for following international developments with implications on a future revision of the BSS

The Article 31 Group of Experts discussed on ways to tackle international developments which may have implications on a future revision of the BSS Directive. The ICRP Chair, as newly appointed member to the Article 31 Group of Experts, offered to regularly inform the group on relevant developments within ICRP. It was also proposed to invite representatives of ICRP Task groups to present the group's specific developments at future Article 31 Group of Experts or working party meetings.

9. MEDICAL EXPOSURES

9.1. Updates on Europe's Beating Cancer Plan

9.1.a. Update on follow up to the work of the Steering Group on Health Promotion and Disease Prevention and its subgroup on proton therapy centres

The subgroup on proton therapy of the Steering Group on Promotion and Prevention (SGPP) was established in 2018 in response to questions from the European Investment Bank (EIB) on the clinical applications of proton therapy centres. To address the issues, the SGPP subgroup explored three routes with EU dimensions: i) supporting research, ii) promoting collaboration between centres, and iii) using conditionality in investment support.

At this meeting, the Commission (DG SANTE) updated the experts on the follow up of the work of the SGPP subgroup on proton therapy centres. In relation to research, the SANTE representative confirmed that, following an agreement with DG RTD, the key research questions identified by the SGPP subgroup will be addressed within the European partnership on radiation protection research Pianoforte. On promoting collaboration, the Commission and the EIB are discussing with sector associations additional cooperation between centres, with a focus on the key area of clinical registries. On conditionality, the Commission has agreed with the EIB on implementing conditional financing with a view to ensure participation of beneficiaries in research efforts, collaborative networks, or clinical registries. With its objectives achieved, the SGPP subgroup was closed on 5 October 2022.

The Article 31 Group of Experts appreciated the presentation and took note of the developments.

9.1.b. New Commission proposal for a Council Recommendation on Cancer screening

The Commission (DG SANTE) presented the Commission's proposal for a new Council Recommendation on Cancer screening as part of the European Beating Cancer Plan and its flagship of a new cancer screening. The proposed recommendation will be an update of the Council Recommendation on cancer screening of 2003, accounting for the latest technology and scientific developments and evidence. Whereas the previous cancer screening recommendation from 2003 was limited to breast, cervical and colorectal cancer, the Commission proposal broadens the focus including a step-by-step approach to introducing prostate, lung and gastric cancer testing. The recommendation is supported by the work on

new EU screening guidelines and quality assurance schemes (guidelines for breast cancer were completed in 2021 and work on colorectal cancer is ongoing by JRC, while for guidelines on cervical cancer the Commission is funding the relevant activity of WHO). Furthermore, the Commission's proposal is associated with the Commission's initiative to improve monitoring and exchange of data through the European cancer information system and European Health Data Space launched in 2022. Adoption of the proposed Recommendation is expected by December 2022[6].

The Article 31 Group of Experts appreciated the presentation and took note of the developments.

9.2. SAMIRA Action Plan

The Commission (DG ENER) provided updates on the implementation of the Action Plan under the Strategic Agenda for Medical Ionising Radiation Applications (SAMIRA). The Action Plan, which was adopted on 5 February 2021, defines EU actions in three priority areas: i) supply of medical radioisotopes, ii) quality and safety in medical ionising radiation applications, and iii) innovation and technological development of respective applications.

Under the pillar of quality and safety, the representative updated the Group of Experts on the new Steering Group on Quality and Safety (SGQS) and introduced its two working groups, namely on clinical audit and on Key Performance Indicators (KPIs). The aim of the SGQS is to (i) provide advice on the direction and content of the SAMIRA work in this area, (ii) draw conclusions from relevant activities and projects, (iii) support the implementation of project results in Member States (MS), and (iv) liaise with stakeholders including patient, professional, research and industry groups. The SGQS met twice in 2022 and plans a 3rd meeting on 7-8 December 2022, while each WG met once in November 2022. In 2023, the SGQS is expected to support SAMIRA clinical audit campaigns at the national level. The WG on clinical audit aims to help MSs overcome barriers and propose concrete actions, taking into account QuADRANT study outcomes and other material such as the relevant HERCA position paper. The Commission gave also an overview of the ongoing 'Quality and Safety' projects funded by the EU general budget (QuADRANT-clinical audit, EU-JUST-CT, SIMPLERAD, 'Equipment' study, 'Incidents' study, 'RPE, RPO, MPE' study), the EU4Health[7] programme (EU-REST project on workforce, education and training, i-Violin project on adaptation and implementation of optimisation tools in cancer CT imaging, and Inter-specialty cancer training programme) or Euratom Research and Training programme (European Partnership for research in radiation protection PIANOFORTE, SECURE-part on personalised planning and dosimetry aspects). Actions planned for 2023 include a study on Q&S based on KPIs, support for local/national clinical audit campaigns, study on medical devices, and follow up actions on previous project outcomes on DRLs.

Under the pillar of security of supply of medical radioisotopes, the Commission updated on the European Radioisotopes Valley Initiative (ERVI). A public consultation was completed in

[6] Link to adopted Council Recommendation of 9 December 2022 on strengthening prevention through early detection: A new EU approach on cancer screening replacing Council Recommendation 2003/878/EC 2022/C 473/01

[7] https://ec.europa.eu/health/funding/eu4health_en

October 2022, meetings of the Stakeholder Group and MSs were held in November 2022, an ERVI feasibility study will be launched soon, and a workshop is planned in 2023.

The Article 31 Group of Experts took note of the developments within the SAMIRA Action Plan and of the DG ENER's revamped webpage on the radiological and nuclear technology in health[8].

9.3. Progress report of the Working Party on medical exposures (WP MED)

The Chair of the Working Party on medical exposures reported on progress made with the work programme since the last Group of Experts' meeting. The WP MED met online on 23 November 2022 and received updates on DG ENER studies under the SAMIRA action plan (SIMPLERAD and Study on Medical Equipment & Monitoring/Control of Patient Exposure) and on recent Commission activities supporting the action plan (EU-REST), received updates on relevant activities by observers, and discussed future work prioritising activities in the work programme. The Chair presented the outcomes of these discussions and summarised the aims, status, next steps of and involvement of the WP MED in the activities supporting SAMIRA and BSS requirements implementation. Finally, the Chair of WP MED gave an outlook on the way forward.

The Article 31 Group of Experts took note of the progress made. In the discussion that followed, some experts raised the importance of clarifying the roles of the WP MED including in reviewing studies supporting SAMIRA and BSS implementation, as well as in identifying/advising on needs for revision of BSS requirements in the future. They also agreed to have an overview presentation of SAMIRA activities related to security of radioisotopes supplies in a future meeting of WP MED.

10. SCIENTIFIC SEMINARS

10.1. Progress report of the Research Implications on Health and Safety Standards (WP RIHSS)

The Chair of the Working Party on Research implications on health and safety standards reported on the work since the last meeting of the Group of Experts.

The WP RIHSS met on 5 July and on 16 November 2022. During these meetings, the working party finalised the proceedings of the EU Scientific Seminar November 2021 *Advances and innovations in individual dosimetry – RP 197* [9] (approved for publication by the Article 31 Group of Experts during their meeting on 17 May 2022) and finalised the programme of and preparations for the EU Scientific Seminar 2022 on *Radiological protection considerations for fusion reactors*.

The Article 31 Group of Experts took note of the progress made.

[8] https://energy.ec.europa.eu/topics/nuclear-energy/radiological-and-nuclear-technology-health_en

[9] In the meantime the proceedings were published and available online via the following link: Advances/innovations in individual dosimetry - Publications Office of the EU (europa.eu)

10.2. Follow up on the EU Scientific Seminar 2022

The Chair of the Working Party RIHSS, who acted also as rapporteur of the seminar, presented the main issues of and preliminary outcomes from the EU Scientific Seminar 2022 on *Radiological protection considerations for fusion reactors* that took place in the afternoon of 29 November 2022[10].

The seminar discussed radiation protection issues in future fusion reactors, based on experience from existing, or under construction, fusion experimental facilities and on available scientific knowledge. Internationally renowned scientists presented:

- Basic radiation protection issues in future fusion reactors
- Radiological inventories and source terms
- Occupational Radiation Exposure
- Environmental Releases and public exposure in normal and accidental situations

The presentations were followed by a round table discussion, during which invited experts addressed also issues with tritium, dosimetry, as well as radioactive waste issues, and together with the speakers, the invited additional experts, and the group of experts, discussed potential policy implications and research needs.

The experts agreed that, while there is significant experience and knowledge available, further research is needed to address specific issues in view of the range of designs, technologies, materials, scales of future fusion reactors, and acknowledged the lack of an international epidemiological study on worker exposure to tritium based on existing data.

The Article 31 Group of Experts commended the WP RIHSS for an excellent organisation of the scientific seminar.

10.3. Topics for upcoming EU Scientific Seminars

The Chair of the WP RIHSS presented a list of potential topics for future scientific seminars highlighting the following three topics prioritised by the working party for the scientific seminar 2023:

- Radiation protection issues in modern external beam radiotherapy (pulsed fields, flash therapy, proton therapy, laser accelerated proton beams, ...)
- Radiation safety under COVID-19 circumstances – challenges and lessons learned
- Radiation protection issues in Small Modular Reactors (SMRs)

The Article 31 Group of Experts discussed the proposed topics and agreed to hold the EU Scientific Seminar 2023 on *Radiation protection issues in modern external beam radiotherapy*. The WP RIHSS will prepare the programme of this seminar.

The experts agreed that the proposed list with the remaining topics will serve as rolling list of topics to be regularly updated and considered for future scientific seminars.

[10] The programme and presentations of the EU Scientific Seminar 2021 can be found under Seminars (europa.eu)

11. Review of the work Programme of the Article 31 Group of Experts "Road Map"

The work programme for the 2020-2025 term was adopted at the first meeting of the current mandate of the Article 31 Group of Experts in November 2020. At the November 2021, the experts reviewed and revised the work programme to its latest version (version 19 January 2022).

At this meeting, the Chair of the Article 31 Group of Experts presented the latest version of the Article 31 work programme.

The Article 31 Group of Experts discussed the rolling work programme. Under the BSS implementation area, the work undertaken by the Group of Experts at this meeting, to develop an Opinion on the New ICRP dose coefficients for internal occupational exposure in 2023, will be added. Under the area of drinking water, it was agreed to add the element on monitoring scientific developments (namely, ongoing work of ICRP on developing new dose coefficients for public exposure, and WHO's expected updated guidelines on drinking water in the next 1-2 years) and advice on potential impact on the Drinking water Directive. In the wider area of radioactive waste management, an expert suggested to consider the outcomes of the scientific seminar 2022 in relation to radiation protection issues in fusion reactors for the future revisions of the work programme.

The Article 31 Group of Experts adopted the updated rolling work programme with the agreed amendments which the Secretariat will implement after the meeting. The work programme will be updated and reviewed on a regular basis.

12. Emerging issues in Member States with potential implications on a European level

No emerging issues were raised

13. Other business

No other business was raised.

14. Dates of the next meetings

The experts reflected on proposed plenary dates in 2023 as well as on possible formats of future meetings (in person, virtual or hybrid). The experts expressed preference for purely in person plenary meetings.

The ***mid-year meeting*** of the Group of Experts is scheduled for ***28-29 June 2023***. The meeting is currently planned as a physical meeting in meeting room EUFO 00/10, European Commission – Euroforum Building, 10, rue Robert Stumper – L-2557 Luxembourg – Gasperich.

The ***end-year meeting*** of the Group of Experts is provisionally scheduled for ***21-22 November 2023***. The meeting will take place in meeting in Room E, European Convention Center Luxembourg, 1, rue du Fort Thüngen, L-1499 Luxembourg (Kirchberg).

A hybrid option could be offered ad-hoc in case a specific need for certain expert(s) or external speaker(s).