

Statement for Women in Radiation Protection

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Executive Summary

The International Radiation Protection Association (IRPA) established the Women in Radiation Task Group (TG WiR) to support gender equity and representation in the radiation protection profession.

A diverse workforce inherently strengthens decision-making by incorporating varied perspectives, leading to robust and ethical outcomes. This principle is particularly critical in radiation protection and safety culture, where gender equity, and broader inclusivity, plays a vital role in diversity of thought. Fostering innovative problem-solving and collaboration will strengthen our overall safety culture, where employees feel empowered to raise concerns without fear of bias, where leadership will actively listen and respond positively to challenge, embedding equitable accountability and the right outcomes for society as a whole.

Women have played a pivotal role in the ever-evolving field of radiation protection and it is imperative to recognise and celebrate their contributions, shaping the landscape of this vital discipline. By working to address the challenges women continue to encounter in the workplace, a fairer and more equitable working environment will be created that will benefit all employees. Women's experiences are shaped by the distinct living and working conditions of their countries, cultures, and professional environments. These disparities can hinder mutual understanding and empathy, making it harder to establish a universal benchmark for fairness or unfairness in treatment.

Therefore, it is critical to create consistent, clear definitions of terms like bias and discrimination, as their interpretation varies widely across societies. These differences stem from contextual factors such as cultural norms, religious beliefs, socio-economic conditions, legal frameworks, and workplace structures. Without shared definitions, productive dialogue becomes difficult.

This Statement aims to enhance visibility and recognition of women's contributions to radiation protection. It brings to the attention of the IRPA Executive Committee several points in a call for action and provides suggestions for the way of implementing measures in the future. Further supporting information is provided in Annexes 1 and 2.

Introduction

Taking note of the various activities of women working worldwide in the field of application of radiation, the International Radiation Protection Association (IRPA) established the Task Group "Women in Radiation" (TG WiR) in 2021.

The women in the TG WiR are drawn from diverse professional backgrounds, including health, research, regulatory, academia, and industry, and bring unique perspectives that directly support and enhance radiation protection efforts.

The goal of this TG is the promotion of a broad exchange of experiences and values for a gender perspective in radiation protection and the development of this IRPA Statement for Women in Radiation Protection. The future of radiation protection benefits from the full potential of all professionals, regardless of gender. Promoting a supportive and diverse environment will lead to more effective radiation safety measures and a stronger global community.

Annexe 1 of this document provides important discussion points which inform this Statement. Further information on the Terms of Reference of the TG WiR can be found in Annexe 2.

Objective

The objective of this Statement is to enhance visibility and recognition of women's contributions to radiation protection and to inspire the next generation of female professionals in this field. Despite significant advancements, women remain underrepresented in leadership, research, and decision-making roles. It is imperative to foster gender diversity, equity, and inclusion to strengthen the field and harness the full potential of all professionals.

The Statement builds upon the feedback collected during the 16th Congress of the International Radiation Protection Association (IRPA16) held in Orlando, USA, July 2024, and further elaborated through subsequent interactions of the TG, with the purpose of bringing to the attention of the IRPA Executive Committee several points in a call for action addressed to IRPA and its associate societies and suggestions for the way of implementing measures in the future.

IRPA - Call to Action

IRPA can help to create a more inclusive, supportive, and empowered environment for women in the radiation protection field, empowering them to thrive personally and professionally.

The call to action for IRPA includes the following key initiatives and strategies to promote gender equity in radiation protection. These combined efforts will not only address immediate challenges but also build a sustainable foundation for gender equity in the field.

1. Advocate for Training Opportunities

IRPA is called to:

- Promote and increase training opportunities specifically addressed and designed for women in the radiation protection field.
- Establish mentorship and sponsorship programs where experienced professionals, both men and women, provide guidance, career advice, and networking opportunities to help women navigate career challenges. Sponsorship—where senior leaders actively advocate for women's advancement—can be particularly powerful in breaking barriers to leadership roles.

2. Enhance Online Webinars and Workshops

IRPA is called to:

- Improve the dissemination of information regarding online webinars and workshops.
- Facilitate enhanced exchange and collaboration between national networks to share insights and best practices.
- Encourage research and representation by supporting women to contribute to scientific research, policy development, and decision-making. Increased female representation in scientific publications, technical panels, and regulatory bodies will help to shape the future of the field while providing role models for the next generation.

3. Provide Regular Online Networking Events

IRPA is called to:

- Organize semi-annual online meetings for women in radiation protection, focusing on topics such as career advancement, promotion, and family planning.

- Include open discussions where Task Group members share their challenges and solutions to create a supportive environment.
- Foster cross-national collaboration by establishing platforms for women to share experiences and solutions to workplace challenges, encouraging mentorship opportunities between women across different countries to strengthen mutual growth and learning.

4. Ensure Equity in Funding Opportunities

IRPA is called to:

- Ensure that IRPA funding policies accommodate career breaks often taken by women for family planning and avoid rigid age limits in funding criteria.
- Offer research grants and fellowships specifically designed for women in radiation-related sciences to bridge existing gender gaps.

5. Provide Childcare Support in every day working life, including Conferences

IRPA is called to:

- Develop strategies to provide childcare services at international IRPA Congresses and conferences to encourage greater participation by women who are primary carers.
- Implement workplace policies for career sustainability, such as flexible work arrangements (remote work, part-time roles, hybrid schedules), equitable parental leave, and accessible childcare services to reduce career interruptions for women.

6. Promote and Foster Cross-National Collaboration

IRPA is called to:

- Establish platforms for women to share experiences and solutions to workplace challenges, fostering a global support network.
- Encourage mentorship opportunities between women across different countries to strengthen mutual growth and learning.
- Enhance visibility and recognition of women's contributions in radiation protection through awards, leadership spotlights, and participation in global conferences.

7. Enhance Workplace Policies for Career Sustainability

IRPA is called to:

- Champion transparent hiring and promotion processes to prevent gender bias and ensure women have equal access to leadership positions.
- Promote flexible work arrangements, equitable parental leave, and family support policies to help women balance professional and personal responsibilities.

8. Focus on Outreach Activities to Secure the New Generation

IRPA is called to:

- Help secure the next generation of radiation protection professionals. It is of crucial importance that efforts should focus on outreach activities that introduce high school students to radiation protection

and related fields, ensuring they are aware of the career opportunities available. As children often form their interests by the age of 7, fostering enthusiasm for science, technology, engineering and mathematics (STEM) subjects should start earlier than high school. Introducing fun, interactive activities related to the safe application of radiation in primary schools can nurture curiosity and sustain interest in these fields from a young age. By engaging students early, regardless of gender, the field can attract fresh talent and ensure its future sustainability.

Concrete steps must be taken to empower women in radiation protection. Expected outcomes of the implementation of these actions are developed in Annexe 1, Section 5 of the present document. By creating these set of actions, which includes establishing mentorship programs, creating networking platforms, and advocating for policies that promote gender equity in hiring and advancement, we can create an environment where all professionals, regardless of gender, can thrive in the radiation protection profession.

Final Statement

As we move forward, creating an inclusive environment will enable women in radiation protection to thrive in this field, innovate and lead, improving the safety and well-being of communities worldwide. Empowering women in this field is not just about fairness—it is a necessity for progress, safety, and innovation. By breaking barriers and fostering inclusivity, we unlock the full potential of diverse talent, driving excellence and ensuring bold actions today to secure a sustainable future for the profession. Working collaboratively to implement these strategies—and celebrating women’s contributions—will amplify their voice, visibility, and support, enabling them to inspire the next generation.

Together, we can join efforts to break down barriers and create equitable opportunities for women to excel in radiation protection. Championing diversity and inclusion is key to driving progress, as the field benefits immensely from the unique perspectives and talents of all individuals. Let us empower each other to reach new heights, ensuring women have the resources and platforms to lead, innovate, and shape a brighter future for all.

While promoting gender diversity and inclusivity is critical, qualifications, skills, competence, and experience must remain central to leadership roles. A balanced approach—valuing merit while actively addressing inequities—will strengthen the profession and ensure it thrives through both excellence and equity.

Annexe 1

Discussion

1. Historical Context

Women have been instrumental in shaping the field of radiation protection since its earliest days, overcoming systemic barriers to leave an indelible mark on science and public safety. Among these pioneers, Marie Skłodowska-Curie stands as a towering figure. Not only was she the first woman to win a Nobel Prize, but she remains the only person to receive Nobel honours in two distinct scientific disciplines—Physics (1903) and Chemistry (1911). Her revolutionary work on radioactivity, including isolating the elements polonium and radium from pitchblende and advancing understanding of uranium and thorium, laid the groundwork for modern nuclear science. Despite relentless gender-based discrimination—such as being denied a seat at the prestigious French Academy of Sciences, a rejection widely attributed to misogyny—Curie persisted in her research, establishing foundational principles that underpin radiation safety protocols still in use today.

Lise Meitner, another trailblazer, played a pivotal role in the discovery of nuclear fission in 1938. Her theoretical insights were critical to interpreting experimental results, yet her colleague Otto Hahn alone received the 1944 Nobel Prize in Chemistry for the breakthrough. Many historians and scientists argue that Meitner's exclusion reflects the era's systemic undervaluation of women's intellectual contributions, even as her work directly informed the development of nuclear energy and radiation medicine.

The legacy of these early female pioneers extends to other groundbreaking women whose contributions, though sometimes overlooked, were equally vital. Chien-Shiung Wu, known as the "First Lady of Physics", revolutionized nuclear physics with her experimental rigor. Her work on beta decay overturned fundamental assumptions in the field and informed radiation detection methods, though her exclusion from the 1957 Nobel Prize for the parity violation discovery remains a subject of debate. Similarly, Edith Quimby, a medical physicist, pioneered the use of radioactive isotopes in cancer treatment and developed early safety standards for radiation dosimetry in healthcare, saving countless lives while advancing ethical practices in medical radiation use.

From the early 20th century to today, women have continued to drive progress in radiation protection across diverse roles—from leading international organizations like the IAEA to shaping regulations in national bodies and spearheading research at universities and laboratories. Their expertise has been indispensable in refining safety protocols, advocating for equitable workplace practices, and addressing public health challenges linked to radiation exposure.

Yet, their achievements have often been obscured by structural inequities. In male-dominated scientific and technical environments, women's contributions were frequently marginalized, attributed to male colleagues, or dismissed as secondary—even when their work was foundational. This pattern persists in subtle forms today, such as unequal recognition in awards or leadership opportunities.

The stories of Curie, Meitner, Wu, Quimby, and countless unsung women underscore a critical truth: diversity of thought, experience, and background is not merely beneficial but essential to scientific progress. Their unique perspectives—rooted in interdisciplinary collaboration and resilience against adversity—have enriched radiation protection practices, ensuring they are both technically robust and ethically grounded. By honouring their legacy, we reaffirm the importance of inclusive, equitable environments in fostering innovation that preserves humanity and the planet.

2. Current Status

Radiation or radioactive material are used for medical, industrial, veterinary, agricultural, legal or security purposes, and in education, training and research. Radiation exposure also results from the mining and processing of raw materials. Each of these fields requires a person with radiation protection expertise.

Women working in the radiation and allied fields face several significant challenges that require attention to create a more equitable and inclusive environment. While it is important to address specific issues faced by women, the broader goal is to establish workplaces where all individuals, regardless of gender, can work comfortably, build their careers, participate in leadership and decision-making roles, and inspire future generations.

Today, while we see an increase in the number of women entering the radiation protection field, challenges such as gender bias and unequal opportunities persist. According to recent statistics, the underrepresentation of women in key positions in the workforce underscores the urgent need for gender equity initiatives. Gender equity refers to ensuring fairness in how women and men are treated, taking into account their unique needs. This fairness may involve providing identical support or differentiated approaches, as long as these are equivalent in terms of rights, advantages, responsibilities, and opportunities, including education, training, and continued professional development.

In the context of education and professional development, it is crucial to incorporate knowledge about the beneficial impacts of radiation in the medical sector. Radiation plays a transformative role in modern medicine, particularly in diagnostic imaging, cancer treatment, and advanced medical research. For instance, X-rays, CT scans, and MRI technologies rely on radiation to provide detailed images of the human body, enabling early and accurate diagnosis of diseases. In cancer treatment, radiation therapy is a cornerstone of oncology, used to target and destroy malignant cells while sparing healthy tissue. Additionally, nuclear medicine imaging techniques, such as PET scans, use radioactive tracers to diagnose and monitor conditions like heart disease, neurological disorders, and infections. Radiopharmaceuticals are being increasingly used in clinical oncology, including theragnostic. These advancements not only save lives but also improve the quality of life for millions of patients worldwide.

Understanding the diverse applications of radiation across medicine, industry, veterinary sciences, agriculture, legal and security sectors, as well as education and research, can inspire more women to pursue careers in these fields. Promoting gender equity and creating inclusive opportunities ensures that diverse perspectives contribute to innovation, safety, and progress in radiation-related disciplines. Encouraging women to enter and advance in these careers strengthens the workforce, enhances decision-making, and fosters a more equitable and dynamic professional environment.

Additionally, efforts to educate and inform communities about the biological effects of radiation exposure are essential, as seen in grassroots initiatives to build a culture of radiation protection in daily life, such as in Fukushima. Expanding this education to include the role of new nuclear technologies is equally important. Integrating these topics—ranging from the life-saving applications of radiation in medicine to the role of nuclear energy in combating climate change—into educational programs and professional development initiatives ensures that individuals, regardless of gender, are equipped with the knowledge and skills to contribute to advancements in both healthcare and environmental sustainability. This holistic approach to education and equity fosters a more inclusive and informed society, capable of addressing complex global challenges.

3. Importance of Inclusion

Inclusivity is not just a matter of fairness; it is a vital component of effective radiation protection. Diverse teams bring varied perspectives, fostering innovation and enhancing problem-solving capabilities, which are crucial in addressing the complex challenges we face in radiation protection. It is essential to actively identify and eliminate bias and discrimination at all levels.

Efforts should focus on ensuring meaningful and visible participation of women in leadership roles, while also creating more opportunities for young women to establish careers in the application of radiation, in particular in the radiation protection sector. Furthermore, it is crucial to support mid-career women who have faced limited opportunities for advancement and may feel stuck in their professional growth. Key steps to promote equity include ensuring equal voice and equal opportunities for promotion, alongside equitable parental leave policies for both men and women. Such policies can help eliminate the stigma surrounding maternity leave and challenge traditional gender roles within families.

Practical initiatives like workshops, panels, and seminars dedicated to supporting women in the workforce can play a pivotal role. Scholarship opportunities should also be provided to encourage education and skill development. Women need to be actively encouraged to advance in their careers, with a strong emphasis on training and learning how to support each other effectively. Continued education and professional recognition are crucial for sustained growth.

Online training, webinars, and other innovative digital learning approaches, offer a flexible and accessible solution for professional development. They are particularly useful for those balancing family responsibilities and women during pregnancy, breastfeeding or while managing childcare responsibilities. These formats enable participation in professional development in the comfort of their homes, removing geographical barriers and accommodating diverse schedules. Recorded sessions are especially beneficial, as they allow participants to access the material at a time that suits them best, ensuring that learning opportunities are not limited by immediate time constraints. This approach supports continuous education and skill-building for women worldwide, fostering inclusion and equity in the workforce.

Raising awareness about women's abilities and the challenges they face in the workplace is another important component. Recognizing and celebrating women's successes and achievements should be a priority, not just within individual workplaces but across industries and society as a whole.

Mentoring programs play a crucial role in supporting women, providing them with guidance, encouragement, and role models as they navigate their careers. These initiatives should extend to regional and international organisations, especially for women in radiation protection or safety roles. Networking opportunities, including outreach to neighbouring countries, can further enhance collaboration and professional growth.

Establishing fellowships for women eager to work in and develop their knowledge of radiation protection but lacking opportunities to attend conferences or engage with international experts can be transformative. Such programs, covering women of all ages and experiences, would allow for exposure to global practices and expertise, particularly benefiting women who may otherwise be excluded due to geographical, political or financial constraints.

Networking events, whether in-person or virtual, offer platforms for women and supportive colleagues to connect and foster positive, outcome-driven collaborations. Including a gender equity, diversity, and inclusivity focus in future regional and global IRPA congresses can help ensure that these critical issues remain central to the field's progress. Additionally, organizing a separate informal networking event alongside these formal gatherings would be highly beneficial. Such an event would provide a more relaxed and intimate setting where participants can engage in deeper conversations, share personal experiences, and build meaningful friendships and support networks. This informal space would complement the structured discussions of the main congress, allowing for both professional collaboration and personal connection. Together, these events—formal and informal—would bring together the work and hopes of this group, fostering a sense of community and solidarity that drives lasting change in the field.

By implementing these measures, organisations and communities can foster a more inclusive environment, empowering women to reach their full potential while addressing systemic barriers to equality.

Sharing best practices across countries, from government policies to organisational strategies and professional initiatives, is vital for advancing equity in radiation protection.

Finally, sharing experiences and findings regionally and internationally is indispensable. By learning from each other, organisations and professionals can collectively address challenges and work towards creating a more inclusive, supportive environment for all.

4. Main needs/challenges faced by women working in the radiation field

One key challenge is the disparity in competence recognition and career progression. Women often take much longer to gain acknowledgment in their roles, while men tend to ascend to senior positions more rapidly. This disparity is compounded by the large gender pay gaps observed in some sectors, particularly in private industry, where women and men performing the same role are compensated unequally¹. As an example, in Europe, it was reported that in 2022, women's earnings were on average 12.7 % below those of men. The gender pay gap varies significantly across Europe and it can be assumed that the gap may be much greater in less developed regions.

Diversity within the radiation field remains lacking in recognition. Although the number of women in the field is slowly increasing, there is minimal representation of gender-diverse and ethnically diverse individuals, especially within the nuclear and radiation protection communities. Additionally, certain technical roles are still stereotypically viewed as "male" positions, perpetuating a culture of "men employing men " that is difficult to break.

Another common experience for women in the field is the struggle to be heard in male-dominated environments. Many women report feeling ignored or undermined during meetings and facing resistance when trying to assert their opinions. The lack of women in senior roles within organisations further exacerbates this issue, limiting access to in-house female mentors and role models.

Practical challenges also persist, such as unsuitable or ill-fitting personal protective equipment, which can hinder women's abilities to perform their roles effectively. Concerns about the health hazards of radiation exposure, particularly regarding fertility and pregnancy, are significant for many women. These issues highlight the need for better communication of risks for understanding, provision of comprehensive risk assessments, and more robust support systems particularly important during pregnancy and maternity leave.

Women who have children or are considering parenthood often face additional difficulties, including insufficient childcare support and limited accommodations for balancing work and family responsibilities. These factors can significantly impact career progression and job satisfaction. This situation is also faced by women working in other areas in addition to the radiation field.

Another concern is the perception of positive discrimination, where women are recruited to senior roles merely to meet diversity quotas, rather than through genuine initiatives designed to encourage qualified women to apply and succeed. This approach can undermine the credibility of the women appointed and detract from the goal of fostering authentic inclusion and equality.

Finally, the existing male-dominated culture of many organisations sets the tone for workplace dynamics. Recruitment practices often reflect this bias, with a preference for individuals who fit existing cultural norms. While there are many women in the radiation field, particularly in the medical sector as safety officers, physicists, and technicians, the industrial sector remains highly male-dominated, further perpetuating these challenges.

¹ -Understanding the gender pay gap: What role do sector and occupation play? Employment and labour markets. December 2021 DOI:10.2806/939946 Publisher: Eurofound ISBN: 978-92-897-2227-8.

-<https://ourworldindata.org/economic-inequality-by-gender>.

-Gillenwalters, Elizabeth; Martinez, Nicole. Review of Gender and Racial Diversity in Radiation Protection. Health Physics 112(4):p 384-391, April 2017. | DOI: 10.1097/HP.0000000000000640

Addressing these issues requires systemic changes to create a more inclusive, supportive, and equitable environment for all individuals working in the radiation field.

Also, the culture of meritocracy should be promoted without considering gender. Ideas should be welcomed and respected from all genders.

5. Expected Outcomes

Positive impacts on the radiation protection profession will result if changes to address the above occurs, including:

(a) Recognising Women's Impact

- Women have historically contributed significantly to radiation protection, from early pioneers to current leaders in regulatory agencies. Their ongoing participation is essential for the evolution of safety standards and public health initiatives within the field.
- Culture is significantly shaped by communication, and it is often observed that the participation of women is of great advantage in this area, demonstrating empathy and understanding that strengthen workplace relationships. This ability to communicate effectively contributes to a more balanced and ethical approach to decision-making, as diverse viewpoints and perceptions are included in the process.

(b) Addressing Current Challenges

- Despite increasing numbers, women in radiation protection face persistent challenges such as gender bias, unequal advancement opportunities, and a lack of representation in leadership. Addressing these barriers is crucial for fostering a more equitable environment.

(c) Integrating a Gender Perspective

- Integrating a gender perspective into radiation protection enhances safety culture and decision-making processes. Diverse perspectives lead to richer discussions and better outcomes in risk assessment and management.

(d) Ensuring Professional Development and Education

- Raising awareness about educational and career opportunities in radiation protection is vital, especially for young women. Programs that promote education, training, and networking are essential for building a skilled workforce.

(e) Providing Mentorship and Networking Initiatives

- Establishing mentorship programs and networking opportunities can provide support and guidance for women in this field. These initiatives should include cross-national collaborations to foster sharing of experiences and best practices.

(f) Ensuring Systemic Changes for Inclusion

- To promote equity, organisations must implement policies that support parental leave, equitable pay, and career advancement, ensuring women feel empowered to succeed in their careers without facing systemic barriers.

(g) Providing Childcare and Support Services

- Providing childcare support during every day work places, including conferences and events can enhance participation among women, making it easier for them to engage fully in their professional development.

Annexe 2

Task Group – Women in Radiation Protection

In 2021, the IRPA Executive Council formed a Task Group on Women in Radiation (WIR) – A gender perspective for the strengthening of Radiation Protection and endorsed a Terms of Reference (ref: [ToR IRPA TG on Women in Radiation.pdf](#)).

As outlined in the Terms of Reference, the objectives of this Task Group are:

- To promote a wide exchange of experiences and values for a gender perspective in radiation protection within IRPA; and
- To develop an IRPA Statement for women in radiation protection.

A key task outlined in the Terms of Reference is to discuss and share experiences on the following topics:

- The role of women in science in the different regional areas and countries: Position of women in Radiation Protection and Advanced Technologies applying radiation.
- Strengthening Radiation Protection and enhancing Radiation Protection Culture through a Gender Perspective.
- The main needs and challenges faced by women working in the radiation protection field, raising awareness of possible professional and employment opportunities, especially among young students in order to increase their interest, participation and commitment.
- The relevance of one cross-cutting issue in gender equality: opportunities for education and training. To identify and share best practices in professional development.
- The strategy of mentoring as one of the important actions to foster professional integration.
- Women and next generation role in the promotion of Safety Culture and Ethics in radiation protection, including healthcare aspects.

It also aims to identify and promote a dialogue by engaging key stakeholders, and strengthening collaboration with relevant partners. The Task Group may also consider preparing a possible Guideline.