



ICRP: past, present, and future

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Abstract—The International Commission on Radiological Protection (ICRP) is a premier international organisation for the protection of workers, patients, and the public against ionising radiation. It was established in 1928 to advance, for the public benefit, the science of radiological protection, with its work in the early years focusing mainly on occupational exposure in medicine. The name ‘International Commission on Radiological Protection’ was adopted in 1950 to reflect the wider and more diverse areas of work that were being undertaken. ICRP has published 13 sets of general recommendations and these form the basis of radiation safety standards worldwide. ICRP consists of the Main Commission and five standing committees. There are 84 official members of the Main Commission and Committees 1–5, but more than 200 members who work with ICRP through its task groups. ICRP has developed a strategic plan for 2011–2017 and has made progress with some of its initiatives. These include establishing close liaison with other radiological protection organisations, responding to the needs and concerns of the radiological protection community, and identifying areas of work that require scrutiny of science and practice to produce relevant recommendations. This strategy means that ICRP will continue to be a leader in radiological protection for many years to come.

Keywords: ICRP; Radiological protection; Recommendations

1. INTRODUCTION

The International Commission on Radiological Protection (ICRP) has been in existence since 1928, and has continuously provided recommendations and guidance on a wide range of subjects. Some of these subjects include the radiological protection of workers, patients, and the public against ionising radiation. These recommendations are incorporated into legislation, regulations, and standards worldwide.

This paper does not necessarily reflect the views of the International Commission on Radiological Protection.

The diversity of work undertaken has expanded over the years and continues to evolve. There are challenges facing all radiological protection organisations, some of which will not be easy to resolve. ICRP will be included in this arena as it continues to be a leading radiological protection authority in the future.

2. ICRP PAST

ICRP was established in Stockholm in 1928 during the Second International Congress of Radiology (ICR), and the initial name was the 'International X-ray and Radium Protection Committee' (IXRPC). The original committee had very few members, two of whom were medical doctors (Lindell, 1996). In the early years, the Committee (or Commission as it was called from 1934) was not very active and met for only 1 day every 3 years at the ICR. Only two members of the IXRPC survived World War II, including the first Chairman, Rolf Sievert (Clark and Valentin, 2009).

In 1950, the Commission was given its present name, the International Commission on Radiological Protection, and a broader remit of work beyond the deleterious effects of x rays in medicine. The six sub committees established at this time were condensed to five sub committees by 1953. These were developed to work on topics including permissible doses for external and internal radiation; protection against x rays generated at potentials up to 3 million volts; protection against x rays above 3 million volts, as well as beta and gamma rays; and the handling and disposal of radioactive isotopes (ICRP, 1955).

The committee structure was re-organised again in 1962, creating four of the committees that exist today, although with revised names and mandates. Committee 5, for protection of the environment, was added in 2005. Since 1928, there have been 12 chairs of the Main Commission (11 individuals, as Rolf Sievert served at two different time periods), with the current chair being the only woman. Scientific secretaries have also been appointed since 1928 and there have been 10 to date. The first full-time, paid scientific secretary was established in 1962, and the presence of such an employee greatly improved the efficiency of the work at ICRP.

Since its establishment, ICRP has written well over 100 publications on all aspects of radiological protection, and a short history of ICRP and the evolution of its policies are included in *Publication 109* (Clark and Valentin, 2009). There have been 13 fundamental recommendations on which regulations are based, the latest being the 2007 Recommendations (ICRP, 2007). The original publications were printed in scientific journals in the areas of medicine and physics, but ICRP has had its own numbered series of reports since 1959, and these have been produced as a separate journal, *Annals of the ICRP*, since 1977.

3. ICRP PRESENT

ICRP aims to advance, for the public benefit, the science of radiological protection, in particular by providing recommendations and guidance on all aspects of protection against ionising radiation. For many years, the organisation has been a

registered charity in the UK. ICRP consists of the Main Commission, with a chair and 12 members, and five standing committees on radiation effects, radiation doses, protection in medicine, application of ICRP's recommendations, and protection of the environment.

The Main Commission and the Scientific Secretariat of ICRP work together to direct, organise, and oversee the work of the committees, task groups, and working parties. All ICRP members are volunteers who serve 4-yearly terms. The membership consists of eminent scientists and policy makers in the field of radiological protection. Although there are 84 members of the Main Commission and Committees 1–5, the wider membership of those involved in task groups and working parties extends to over 200 experts from 30 countries. A new term began on 1 July 2013 with, for the first time, a process of open nominations and elections for membership. At any one time, there are 20–30 task groups and working parties working on many different aspects of radiological protection.

ICRP now has two paid employees: the Scientific Secretary and, since 2009, the Executive Assistant. Additional administrative support is provided by the position of assistant secretary, filled on a multiyear term basis as a cost-free staff loan from the Central Research Institute of the Electric Power Industry of Japan, and by the position of intern filled on a 4-monthly rotation by students from the Canadian Nuclear Safety Commission.

The system of radiological protection that has evolved since 1928 is the basis for radiological protection standards, guidance, programmes, and practice worldwide. The objective of the work of ICRP is to contribute to an appropriate level of protection against the detrimental effects of ionising radiation exposure without unduly limiting the benefits associated with the use of radiation. In preparing its recommendations, ICRP considers advances in scientific knowledge, evolving social values, and practical experience. Formulating standards, regulations, and codes of practice is the responsibility of other national and international organisations. The recommendations of ICRP are largely adopted by the International Atomic Agency into the Basic Safety Standards, and are incorporated into the national legislation of many countries.

4. ICRP FUTURE

In 2011, ICRP developed, for the first time, a strategic plan to extend to the end of the term of membership in 2017. This was devised to outline some historical and operational information regarding ICRP, as well as highlighting challenges, objectives, and initiatives regarding the policy and future direction of ICRP in coming years. The main areas of challenge include keeping abreast of technological developments in medicine, the non-cancer effects of radiation (e.g. cardiovascular), natural sources of radiation, integrating protection of the environment into the system of radiological protection, and ensuring the maintenance of knowledge and expertise in radiological protection amongst professionals.

Initiatives have already begun to address some of these challenges. ICRP aims to raise awareness of radiological protection in medicine by continuing to produce

focused publications on specific topics, and by increasing ICRP participation in medical meetings wherever possible.

ICRP will continue to seek some of the best-informed experts in its membership through a process of nomination and election, but realises that maintaining knowledge in radiological protection in younger and future generations is, in itself, a challenge. Interest in the subject of radiological protection has to be promoted and encouraged with research and other educational opportunities.

A system of protection for the environment has been developed by Committee 5, and it is important that this is fully integrated into the existing system of radiological protection. Task Group 82 (joint work between Committees 4 and 5) on 'Integrating the system of protection for human and non-human species' is now complete and awaiting publication.

There are currently many other organisations working in the field of radiological protection, and ICRP recognises that collaboration with these organisations will promote and achieve the best practices in radiological protection for the benefit of the public, workers, and patients. The aim is to promote the one system of radiological protection that should be applicable to all. ICRP has long had a close relationship with these other radiological protection organisations. However, the number of such organisations continues to increase, and ICRP has established working partners as 'special liaison organisations', who are invited to share information and advance radiological protection into the future.

ICRP aims to promote its work and stimulate discussion on different areas of radiological protection, and hence has established a biennial International Symposium on the System of Radiological Protection. The first symposium was held in Bethesda, MD, USA in 2011 and the second symposium was held in Abu Dhabi, United Arab Emirates in 2013. These have included several topical and challenging issues related to radiological protection in the programme. The third symposium is already being planned and will be held in Seoul, Korea in 2015.

ICRP is a small charitable organisation whose publications are produced by volunteer expert members with limited extra time to promote the work at appropriate forums. The publications of ICRP are not currently freely available and are relatively expensive, usually being purchased by organisations and institutions rather than individuals. ICRP is aware of this issue and is developing strategies to increase its financial reserve, and hopefully allow distribution of its publications at low or no cost.

5. CONCLUSIONS

ICRP has a long tradition of providing recommendations and guidance on radiological protection and is a well-known and widely respected organisation. The membership is drawn from experts worldwide, and ICRP prides itself on maintaining its independence from government and other external influences. The challenges faced by many organisations working in radiological protection are numerous, and ICRP is actively involved in many different arenas. ICRP will continue to be a leading

authority in radiological protection, and by collaborating closely with other relevant organisations, will impact on the evolving system of radiological protection far into the future.

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