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The Inter-Agency Committee on Radiation Safety—30 years of international coordination of radiation protection and safety matters

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Abstract

The Inter-Agency Committee on Radiation Safety (IACRS) was constituted in 1990, as a forum for collaboration and coordination between international bodies with regards to radiation safety. It consists today of representatives of eight intergovernmental member organizations (the European Commission, Food and Agriculture Organization, International Atomic Energy Agency (IAEA), International Labour Office, Organisation for Economic Co-operation and Development/ Nuclear Energy Agency (OECD/NEA), Pan American Health Organization, United Nations Scientific Committee on the Effects of Atomic Radiation and the World Health Organization) and five observer non-governmental organizations (International Commission on Radiological Protection, International Commission on Radiation Units & Measurements, International Electrotechnical Commission, International Radiation Protection Association and International Organization for Standardization). The IACRS provides a platform for interaction between these relevant international bodies to contribute to a common understanding of the scientific basis and legal framework for the application of the system of radiation protection, towards global harmonisation of radiation safety standards. The IACRS played a key role in the development of the International Basic Safety Standards (BSS) in 1996 and in its revision in 2014. Further, an IACRS specific Task Group—chaired by the IAEA—fosters the implementation of the BSS in a consistent and coherent manner in all Member States of the United Nations. The IACRS operates via a standing secretariat jointly provided by the IAEA and OECD/NEA and is chaired by one of its member organizations on a rotating basis for periods of about 18 months. This approach has proved to be effective and was the foundation for ensuring continuity of the work of the committee and at the same time allowing a rotating leadership for all member organizations. Currently, the IACRS is chaired by the WHO. The International Radiation Safety Framework under which the IACRS works is structured around four main areas: (a) science; (b) principles; (c) standards; and (d) practice. This paper presents briefly the mandates, roles and functions of the various international bodies that are relevant to the four above mentioned areas of work, discusses how these bodies coordinate their actions and complement each other to enhance radiation protection and safety worldwide and describes their contribution to the achievement of the Sustainable Development Goals. The paper also provides an overview of the main accomplishments of the IACRS since its inception 30 years ago, and an outlook on key challenges for its future activities.

Keywords: international basic safety standards, radiation safety, sustainable development goals

(Some figures may appear in colour only in the online journal)

1. Introduction

The IACRS—Inter-Agency Committee on Radiation Safety—was constituted in 1990 as a forum for consultation on and collaboration in radiation protection and safety matters between international organizations [1]. The creation of the IACRS represented an important step towards international harmonisation of radiation protection and safety. Through the IACRS, international organizations strive for a harmonised and orderly evolution of the science, principles, standards and practice in the field of radiation protection within an overall international radiation safety framework. Holding regular and extraordinary meetings, sharing information and coordinating actions are the basis for the successful interactions between the organizations to foster an effective implementation of the international radiation protection framework.

1.1. Purpose

The purpose of the IACRS is to promote consistency of policies and co-ordination of activities with respect to areas of common interest in radiation protection and safety at the international level. This includes applying radiation protection and safety principles and criteria for the development and implementation of safety standards, and translating them into regulatory terms, as well as in practical processes/procedures; fostering coordination of research and development; advancing education and training; promoting widespread information exchange; facilitating the transfer of knowledge on using latest research and technology practice; and providing services in radiation protection and safety.

1.2. Composition

The IACRS is composed of thirteen representatives from international organizations, including eight members from intergovernmental organizations concerned with radiation protection and safety matters, and five observers from non-governmental organizations involved in activities related to radiation protection and safety. At present the eight member organizations are the European Commission (EC), Food and Agriculture Organization (FAO), International Atomic Energy Agency (IAEA), International Labour Office (ILO), Organisation for Economic Co-operation and Development/ Nuclear Energy Agency (OECD/NEA), Pan American Health Organization (PAHO), United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the World Health Organization (WHO), while the five observer organizations are the International Commission on Radiological Protection (ICRP), International Commission on Radiation Units & Measurements (ICRU), International Electrotechnical Commission (IEC), International Radiation Protection Association (IRPA) and International Organization for Standardization (ISO).

The IACRS holds regular meetings on a periodic basis, as deemed necessary but with an interval between regular meetings generally not exceeding 18 months. The chair, in consultation with the secretariat and the committee, can convene extraordinary meetings. Since 2012, the IACRS has held extraordinary on-line meetings on a regular basis of about four times per year.

The IACRS agrees which member organization will host the next regular meeting and chair the committee during the following period. The chair, in principle, rotates among the member organizations on a regular basis. Currently, the IACRS is chaired by the WHO, which hosted

Table 1. IACRS meeting hosts (chairs), locations and year of meeting.

IACRS meetings	Meeting information		
	Host organization	Location	Year
1	IAEA	Vienna	1990
2	WHO	Geneva	1991
3	EC	Brussels	1992
4	PAHO	Washington	1993
5	FAO	Roma	1995
6	IAEA	Vienna	1996
7	IAEA	Vienna	1998
8	ILO	Geneva	1999
9	OECD/NEA	Paris	2001
10	EC	Luxembourg	2003
11	PAHO	Washington	2005
12	WHO	Geneva	2006
13	IAEA	Vienna	2008
14	OECD/NEA	Paris	2010
15	ILO	Geneva	2011
16	UNSCEAR	Vienna	2012
17	FAO	Vienna	2014
18	EC	Luxembourg	2015
19	PAHO	Washington	2017
20	WHO	Geneva	2019
21	IAEA	Virtual*	2021

the 20th regular meeting in July 2019 (see table 1). The IAEA will host the next regular meeting in 2021.

Since 2014, the IACRS has had a standing secretariat provided by the IAEA and OECD/NEA for continuity. Member organizations appoint the secretariat for a period of 6 years.

The chair, in consultation with the secretariat, is responsible for arranging representation at meetings of the Inter-Agency Committee on Response to Radiological and Nuclear Emergencies (IACRNE) [2].

1.3. Functions

The functions of the IACRS are undertaken without prejudice to the roles and responsibilities of the member organizations. The IACRS's activities do not affect the other arrangements defined in agreements between organizations, or their day-to-day implementation. The committee may set up task groups to address specific issues. The IACRS has the following main functions:

- To provide a forum for the timely exchange of information between the organizations on their respective activities enabling as far as possible the harmonisation of their respective plans and activities related to radiation safety, *inter alia*, in order to avoid inconsistency or unnecessary duplication of radiation safety standards and recommendations.
- Specifically, as and when appropriate, to consider proposals to the IAEA to initiate a process for the review, and, if warranted, the revision of the International Basic Safety Standards for

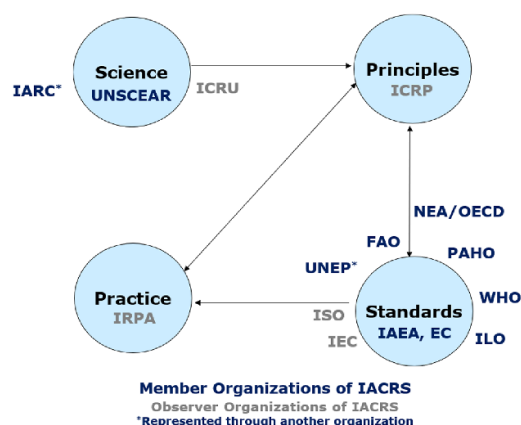


Figure 1. Main mandates of IACRS organizations in the International Radiation Protection and Safety Framework.

Protection against Ionizing Radiation and for the Safety of Radiation Sources, and to assist in this process to the extent applicable.

2. International radiation safety framework

The International Radiation Safety Framework is structured around four main areas: (a) science; (b) principles; (c) standards; and (d) practice. Figure 1 shows the mandates and functions of various international organizations, members and observers of the IACRS, relevant to these areas. The figure has been prepared for illustrative purposes and it is not intended to be definitive or exhaustive, as there are some areas and interaction not represented (e.g. assessment of global levels of exposure, which would fall under science, but would have links to standards and practice as well as principles; and feedback from future research).

2.1. Roles and responsibilities

The roles and responsibilities of the IACRS members and observers complement each other around the four main areas described above. The UNSCEAR's role is to synthesise the scientific information on levels and effects (including risk) of radiation exposure based on latest scientific information and published scientific research. The ICRU develops internationally agreed-upon units for measurement of radiation and is the leading organization regarding quantities and units of radiation and radioactivity. The scientific syntheses on radiation levels and effects, and the international recommendations on radiation quantities and units are used by the ICRP, together with other considerations such as ethics and social science, to formulate principles and a system/rationale for protection. The IAEA has a leading role in setting international radiation safety standards in cooperation with other international agencies. Under the Euratom Treaty, the EC plays a key role in setting standards for European countries. Specialised organizations (the FAO, IAEA, ILO, OECD/NEA, PAHO and WHO) have complementary roles in developing standards, policies, guidelines and frameworks for protecting public health, patients, workers and the environment. The United Nations Environment Programme (UNEP) is represented at the IACRS through the UNSCEAR, which is administered by the

Table 2. Matrix of topics related to the main mandates of the members and observers of the IACRS.

Topic	Leading organizations	Contributing organizations
SCIENCE (dealing with radiation exposure)		
Assessment of public (environmental) exposure to natural sources	EC, UNSCEAR	IAEA, WHO
Assessment of occupational exposure levels	EC, UNSCEAR	IAEA, ILO, WHO
Assessment of medical exposure levels	EC, UNSCEAR	IAEA, WHO
Evaluation of studies on effects and health risks for humans	IARC ^a , UNSCEAR,	EC, IAEA, ICRP, WHO
Evaluation of studies on effects on biota and ecological risk	UNSCEAR	EC, IAEA, ICRP, UNEP ^a
Research agenda	IARC ^a , ICRU, UNSCEAR, WHO	EC, IAEA
PRINCIPLES		
Evaluation of effects and risk on human and on biota for purposes of setting protection paradigm	ICRP	IAEA, ILO, UNEP ^a , UNSCEAR, WHO
Protection paradigm, principles, system, conventions, quantities and units	ICRP, ICRU	IAEA, ILO, ICRU, NEA, WHO
STANDARDS		
Medical exposure	EC, IAEA, WHO, PAHO	
Occupational exposure	EC, IAEA, ILO, WHO	
Public exposure (including food and drinking water)	EC, IAEA, FAO, WHO	UNEP ^a
Protection of non-human species	IAEA	ICRP, NEA
Emergencies	EC, IAEA, IACRNE ^a	FAO, UNEP ^a , WHO

(Continued.)

Table 2. (Continued.)

Topic	Leading organizations	Contributing organizations
PRACTICE		
Measurements	IAEA, ICRU, IEC, ISO	UNSCEAR
Risk assessment and optimisation of protection	IAEA, IRPA, NEA, WHO	UNSCEAR ^b
Compensation/liability	IAEA, ILO, WHO	
Optimisation in occupational protection	IRPA, NEA	IAEA, ILO, UNSCEAR ^b
Safety culture	ILO, IRPA, WHO	IAEA
Optimisation in medical practice	IAEA, ICRU, IEC, ISO	UNSCEAR
Remediation	IAEA, IRPA, NEA	UNEP ^a , UNSCEAR ^b

^a Represented through another organization member of the IACRS^b Contribution on radiation science matters

UNEP. Further, the International Agency for Research on Cancer (IARC), the specialised cancer agency of the WHO, promotes international collaboration in cancer research. IEC is the leading organization for setting international standards on electrical and electronic devices and systems. The ISO is the world's leading organization for the preparation and publication of international standards that support innovation and technical challenges. By the IACRS, both the IEC and ISO coordinate with other agencies their activities in the area of radiation safety. The international standards are translated into regulations and put into practice by Member States, and ultimately, by practitioners, whose professional body—IRPA—collects feedback on their effectiveness and provides benchmarks of good professional practice. Table 2 shows a matrix of the topics related to the main mandate of the members of the IACRS and their roles in leading or contributing to actions related to initiating, planning and conducting relevant activities.

3. Main accomplishments

The IACRS played a key role in the development of the International Basic Safety Standards (BSS) in 1996 and in its revision in 2014 [3, 4], which is the international benchmark for radiation safety used in many countries as the basis for national legislation to protect workers, patients, the public and the environment from the risks of ionizing radiation. Further, an IACRS specific Task Group—chaired by the IAEA—fosters the implementation of the BSS in a consistent and coherent manner and coordinates activities on promotion and application of BSS.

In 2004, the IACRS recognised the IAEA-ILO International Action Plan for Occupational Radiation Protection with nine key areas aiming to strengthen occupational radiation protection [5]. In 2010, the IACRS developed a short summary document on security screening devices. It remains an up-to-date source of background information on these devices. In 2015, the IACRS contributed to the discussion and consequences of the reduction of occupational dose limit for the lens of the eye from 150 mSv per year to 20 mSv per year. In 2020, following the ICRP revised dose conversion factors for exposure due to the radon in workplaces and the UNSCEAR 2019 report on lung cancer from exposure to radon [6], the IACRS supported the position that no changes are necessary to the BSS recommendations of the use of radon reference values expressed in terms of Bq/m³. All IACRS statements are online available [1].

Further, the IACRS contributes through its member and observer organizations to the achievement of the United Nations Sustainable Development Goals (SDGs) [7] with focus on the SDGs 2, 3, 4, 6, 7, 8, 13, 14, 15 and 17.

4. Conclusion

Member and observer organizations of the IACRS contribute to the International Radiation Safety Framework through their various mandates and roles and they consult, cooperate and collaborate with each other, and identify opportunities for improvement in how the framework operates. Despite the IACRS having operated now for 30 years with successful contribution to the preparation of the BSS, there are remaining challenges to be addressed such as avoiding overlaps and misunderstandings regarding mandates and roles; and improving coordination of activities and consultation with key stakeholder organizations outside the IACRS. It will continue working together to enhance collaboration and coordination between international bodies with regards to radiation protection and safety matters.

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