CURRENT AND PLANNED ACTIVITIES OF THE IRPA - INTERNATIONAL NON-IONIZING RADIATION COMMITTEE

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ABSTRACT

In its fifteen years existence, IRPA - INIRC has worked hard to achieve the objective that IRPA assigned to the Committee when creating it in 1977. The IRPA-INIRC Guidelines on limits of exposure now cover a large part of the electromagnetic spectrum as well as ultrasound and some of them have been updated in recent years. INIRC's activities since the last IRPA Congress in 1988, its work in progress and future programme are detailed below.

INTRODUCTION

As compared to ionizing radiation, non-ionizing radiation protection is a rather young matter of concern and IRPA-INIRC, the first international body specifically set up to this purpose, was created 50 years later than ICRP. For a long time health protection interests were mainly focussed on the nuclear industry. In recent years, however, the public has become increasingly aware of other factors of nuisance in its living and working environment, and NIR which is omnipresent in our everyday life is one of these. Public contests against planned or even existing NIR-emitting installations are developing and workers' concern about possible hazards from NIR has manifested itself in various industries. There is an increasing request for regulatory protection measures and guidance in this respect and the IRPA guidelines are being recommended or adopted in an increasing number of countries.

Non-ionizing radiation (NIR) refers to a wide range of radiations and fields with different physical characteristics and different processes of interaction with living matter. This requires that the composition of INIRC reflects appropriate expertise with respect to the different NIR and recognized competence within various disciplines. When considering the work achieved by INIRC since its creation, it must be borne in mind that its membership was limited to 12 members plus a Chairman and a Scientific Secretary, and for a long time was even less than that. For the last 4-year period, INIRC's membership included the following :

M.H. Repacholi, Chairman (Australia),
H.P. Jammet, Chairman Emeritus (France), J.H. Bernhardt (F.R.Germany), B.F.M. Bosnjakovic (The Netherlands), L.A. Court (France), P.A. Czerski (U.S.A.), M. Grandolfo (Italy), B.G. Knave (Sweden), A.F. McKinlay (U.K.), M.G. Shandala (U.S.S.R.), D.H. Sliney (U.S.A.), J.A.J. Stolwijk (U.S.A.), M.A. Stuchly (Canada), L.D. Szabo (Hungary), A.S. Duchêne, Scientific Secretary (France).

Professor P. Czerski, charter member of INIRC, died in April 1990. He was a pioneer investigator in the effects of non-ionizing radiation on biosystems and a fervent promoter of international cooperation. With him, INIRC lost one of its most active members.

ACTIVITIES OF IRPA-INIRC.

INIRC's work up to 1988 has been reported in detail at the 7th International Congress of IRPA . Since then, INIRC carried on its activities in three directions, namely: the preparation of new guidelines for other parts of the NIR spectrum and of statements on questions of the moment ; the analysis of background data relating to NIR in cooperation with the World Health Organization (WHO) ; and the development of practical guidance for protection against NIR at the workplace in cooperation with the International Labour Office (ILO).

In addition, INIRC contributed to the promotion of NIR protection through the organization or cosponsoring of Workshops (Melbourne, Australia, 1988 ; Vancouver, Canada, 1992) or International Courses on NIR (Erice, Italy, 1989).

IRPA-INIRC guidelines

New data on the biological effects and the relative spectral effectiveness in the UV-A region lead INIRC to revise its 1985 Guidelines on limits of exposure to ultraviolet radiation. The table of relative effectiveness values has been completed for the different wavelengths between 315 and 400 nm. Furthermore, it was felt that the former irradiance limit of 10 W m^{-2} for periods greater than 1000 s included an insufficient safety factor for longer periods. The revised exposure limits for the near UV spectral region, expressed in terms of radiant exposure (J m^{-2}), were published in Health Physics, vol. 56, June 1989.

Many specialists in the field of ultraviolet radiation have called attention to the long term health risks of excessive UV exposure. Following some concern about the potential hazard associated with fluorescent lighting, INIRC's conclusions that UVR exposure from indoor fluorescent lighting should not be considered a malignant melanoma risk were published in a statement on *"Fluorescent lighting and malignant melanoma"*, Health Physics, vol. 58, January 1990. Despite many warnings, the populations living in temperate climates are still keen about suntanning. While voluntary exposure to the natural sun cannot be controlled, there is a real need to minimize the risks due to the use of artificial sunbeds and a statement to this purpose *"Health issues of ultraviolet 'A' sunbeds used for cosmetic purposes"* was published in Health Physics, vol. 61, August 1991.

INIRC's *"Interim guidelines on limits of exposure to 50/60 Hz electric and magnetic fields"* were published in Health Physics, vol. 58, January 1990. These guidelines deal with one of the presently most controversial issues in the field of NIR. The question in debate is whether extremely low levels of 50/60 Hz electric or magnetic fields (about 0.25 μT) could induce an increased risk of occurrence of cancer or leukemia, although there is no proof of such a risk at high levels. INIRC's position in this respect, as stated in the guidelines, is : "The exposure limits are based on established or predicted effects of exposure to 50/60 Hz fields. Although some epidemiological studies suggest an association between exposure to 50/60 Hz fields and cancer, others do not. Not only is this association not proven, but present data do not provide any basis for health risk assessment useful for the development of exposure limits".

Magnetic resonance imaging and spectroscopy have become useful tools in clinical diagnostic. These techniques involve exposure of the patient to radiofrequency electromagnetic fields and to static and time-varying magnetic fields. A report dealing with *"Protection of the patient undergoing a magnetic resonance examination"* has been published in the December 1991 issue of Health Physics, vol. 61.

A few months ago, draft guidelines on limits of exposure to static magnetic fields have been distributed to IRPA Associate Societies for review. Depending on the comments received, these will be either finalized and approved or discussed again during the INIRC meeting in May 1992.

Finally, it is important to note that, for easier consultation, the INIRC guidelines and statements published in Health Physics up to end 1990 have been collected together in a single book issued by Pergamon Press in May 1991. The book is available to IRPA members at a special rate.

Environmental health criteria

Important advances in biological radiofrequency radiation research made it necessary to revise E.H.C.16 for Radiofrequency and Microwaves (1981). Therefore, a new E.H.C. document for Electromagnetic fields in the frequency range from 300 Hz to 300 GHz was prepared in cooperation with WHO and with funding from UNEP. The Environmental Health Directorate of the Health and Welfare of Canada kindly hosted and provided financial support for the international task group that met in Ottawa to review and complete the draft. The new UNEP/WHO/IRPA document is expected to be issued in 1992 in the WHO Environmental Health Criteria series.

Guidance for safe occupational practice

IRPA-INIRC collaborates with the ILO to provide guidance on working conditions and procedures that will lead to higher standards of safety in the workplace. After a report on protection against radiofrequency and microwave radiation published in 1986, ILO has asked INIRC to deal with further topics about which workers were concerned. At ILO's request the three following practical guides have been prepared :
- Practical guide on the protection of workers from power frequency electric and magnetic fields ;
- Visual Display Units - radiation protection guidance ;
- Practical guide on the use of lasers in the workplace.

These joint ILO/IRPA-INIRC publications will be published in the ILO Occupational Safety and Health Series.

Future programme of work

- *Environmental Health criteria documents.* INIRC has submitted to WHO proposals for the revision of EHC 14 for Ultraviolet Radiation (1979) in priority, to be followed by the updating of EHC 22 for ultrasound (1982) and EHC 23 for lasers (1982).
- *Guidelines on limits of exposure.* As a general rule, INIRC's guidelines are periodically revised to be kept in line with significant progress in scientific knowledge.

In the field of optical radiation, INIRC intends to develop guidelines on limits of exposure for visible and infrared radiation, and to amend the guidelines for lasers with respect to the exposure limits for extended sources.

Concerning electromagnetic fields, the guidelines should be completed over the frequency range between 0 and 10^5Hz.

- *Guidance for safe operational practice.* INIRC feels that several topics should be dealt with, such as UV and infrared radiation for indoor workers, UV radiation for outdoor workers, and radiofrequency heating devices.
- *Joint project.* Considering the expanding use of NIR in medical technologies, it was found desirable that a Manual for the protection of health care workers against NIR be developed under the joint sponsorship of ILO, INIRC and WHO.

CONCLUSION

IRPA-INIRC has now gained international recognition in the field of protection against NIR and the IRPA-INIRC guidelines are known in all parts of the world. This would not have been achieved without the continuous and active support of the IRPA Executive Council and the IRPA members. INIRC is also grateful for the encouragement and support of national institutes and of international organizations and, in particular, of the World Health Organization, the United Nations Environment Programme, the International Labour Office and the Commission of the European Communities. INIRC has grown up and, to consolidate its international status, IRPA intends to give it a charter as a more independent body. If set up during the present Congress, the future International Commission on Non-Ionizing Radiation Protection (ICNIRP) will continue INIRC's work and still retain a special relationship with IRPA.

PUBLICATIONS

Non-Ionizing Radiations: Physical characteristics, biological effects and health hazard assessment. M.H. Repacholi, ed. IRPA-INIRC, 1988. Available: Australian Radiation Laboratory, Lower Plenty Road, Yallambie, Victoria, Australia 3085.

IRPA Guidelines on Protection against non-ionizing radiation. A.S. Duchêne, J.R.A. Lakey, M.H. Repacholi, eds. New York : Pergamon Press, 1991