Argentine Society of Radiation Protection

Statement of the Argentine Society of Radiation Protection (SAR) on the protection of the public and the environment in exposure to non-ionizing radiation (RNI)

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Introduction

One of the objectives of the Argentine Radioprotection Society (SAR) is "To promote knowledge of the criteria of Radiation Protection regarding the existence and use of radioactive and fissile substances and sources of radiation-generating facilities."

Although in the origins of SAR Non-Ionizing Radiation (RNI) were not part of its purposes, current technological evolution requires an exhaustive and updated vision of the possible impact of radiofrequency electromagnetic fields (RF-EMF) on health. In a context where technology and communications evolve rapidly, it is essential to provide society and institutions with information based on rigorous scientific evidence.

Non-ionizing radiation is a form of electromagnetic energy that does not have the ability to ionize atoms or molecules. In Argentina, this radiation is regulated by several regulations, among others:

1. Resolution No. 202/95 of the Ministry of Health of the Nation, which approved the National Safety Standard for exposure to radio frequencies between 100 KHz and 300 GHz.
2. Resolution 77/1998 of the Ministry of Energy that establishes the maximum permissible limits for occupational exposure to electromagnetic fields in the frequency range between 0 Hz and 300 GHz.
3. Resolution 269/2002 of the National Communications Commission, which defined the evaluation prior to the installation of emitting antennas, and approved the Protocol for the Measurement of Non-Ionizing Radiation and the forms for reporting the results of such measurements.
4. Resolution 11/2014 of the Ministry of Communications, which created the National System for the Monitoring of Non-Ionizing Radiation (SINAM).
5. Resolution 1994/2015 of the Ministry of Health, which adopts the recommendations made by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), referring to the average Specific Absorption Rate (SAR) for the whole body.

These regulations aim to protect workers and the general public against possible harmful effects derived from the use or prolonged exposure to non-ionizing radiation, in different work contexts or specific situations.

The SAR has recognized and recognizes as reliable sources, on protection in exposure to RNI, the documents prepared by the World Health Organization (WHO), the International Association for Radiological Protection (IRPA), of which it is a member as an Associated Society, and the International Commission on Non-Ionizing Radiation Protection (ICNIRP). IRPA created an International Committee on Non-Ionizing Radiation and then, in 1992, ICNIRP.

In this regard, the ICNIRP documents should be highlighted:

1) ICNIRP Statement: a description of ICNIRP'S independent, best practice system of guidance on the protection of people and the environment from exposure to non-ionizing radiation, publicado en Health Physics 122(5):625-628; 2022
2) ICNIRP Statement: Principles for non-ionizing radiation protection, publicado en Health Physics 118(5):477–482; 2020.

And in particular, the document that develops the guidelines where the specific quantitative levels for the protection of human beings from the effects of exposure to RNI are presented:

3) ICNIRP Guidelines for limiting exposure to electromagnetic fields (100 kHz to 300 GHz), publicado en Health Physics 118(5): 483–524; 2020.

Fundamental principles

The objective of protection, for both ionizing and non-ionizing radiation, is to provide an adequate level of protection to people and the environment, without unduly limiting the beneficial practices that result in exposure to such radiation. The radiation protection process is based on informed decision-making, even in cases where complete knowledge of the risks associated with exposure is not available.

The SAR considers that the fundamental principles of Radiation Protection for ionizing radiation (Principles of Justification, Optimization and Dose Limitation), are possible to apply for exposure to RNI. Recommendations should be based on an appropriate assessment of the available scientific evidence of demonstrated health effects, and it is from this that exposure limits can be defined.

As in the case of the radiation protection system for ionizing radiation, it will be the responsibility of the enforcement authorities to take into account and evaluate the economic and social factors that may apply. In the case of non-ionizing radiation that is not produced by humans, the authorities may only inform the public about how to protect themselves from it.

Based on information published by International Organizations, among others:

1. International Commission on Non-Ionizing Radiation Protection (ICNIRP).
2. WHO (World Health Organization).
3. International Agency for Research on Cancer (IARC).
4. Report on Radiofrequencies and Health (2020-2022) of the Scientific Advisory Committee on Radiofrequencies and Health (CCARS) of Spain, 2023.

It can be concluded that:

A great variability of measurement methodologies is observed in the field of personal exposure to EMF-RF and 5G environments. This highlights the need for a more homogeneous approach, in order to be able to carry out a more accurate assessment.

Great progress has been made in understanding the potential effects of RF-EMFs, including carcinogenesis and genotoxicity, through in vivo and in vitro experimental studies. The findings of several studies indicate that there are no significant negative effects on human health at usual exposure levels.

Likewise, clinical and epidemiological studies have not reported significant changes in the effects on human health. So far, a direct relationship with the use of mobile telephony has not been established, and although variations in the incidence of certain tumors (nervous system, thyroid, among others) have been observed, this could be due to other

factors such as improvement in diagnosis and follow-up, longer life expectancy of the population or other environmental factors.

International agencies and committees maintain that, according to current knowledge, as long as the regulations and recommendations of the competent institutions in the field (WHO, EU, ICNIRP) are respected, there is no proven link between exposure to RF-EMF and significant health risks.

It is worth mentioning that the WHO, through IARC, classified in 2011 the electromagnetic radiation emitted by mobile devices as a possible human carcinogen within Group 2B. This classification has been maintained, as the increase in tumors related to RF-EMFs has not been conclusively demonstrated.

To this end, it is necessary to continue researching and preparing reviews of the scientific literature, as in any other field of human activities. In particular, it is important to confirm that radiofrequency electromagnetic fields would affect the body through only two biological effects: changes in the permeability of membranes and an increase in temperature, especially with regard to emerging and widely used technologies such as 5G. There are currently very few studies in the 26 GHz and 28 GHz band (5G telephony) and it is considered that more studies and measurements should be carried out before its universal use is universalized.

Conclusion - SAR Positioning

The SAR stresses the importance of continuous and rigorous scientific research. It is essential to carry out experimental in vivo and in vitro studies, as well as epidemiological studies, financed by governments and institutions without commercial commitments, and carried out by scientists of various specialties and recognized prestige.

Based on the current knowledge of science, and the evaluation of all studies analyzed, it can be inferred that while no significant detrimental effects on human health have been identified, the need to continuously monitor and evaluate all mobile telecommunications technologies, including 5G, is emphasized.

For this reason, conservatively, the use of the "hands-free" modality for mobile phone calls continues to be advised.

Future public health policies and safety recommendations will require scientific consensus and international collaboration. Professional societies and international organizations should continue to play a critical role in achieving these goals.