

## **ANNUAL REPORT on EMF ACTIVITIES in ITALY (2010)**

### **General research activities related to EMF health**

The research activity in 2010 was mainly based on the same topics outlined in 2009. The main institutions involved are Universities, grouped in ICEMB consortium, the National Research Council (CNR), the Italian national agency for new technologies, energy and economic sustainable development (ENEA), the Institute for Environmental Research and Protection (ISPRA), the National Institute of Health (ISS), and the National Institute for Occupational Safety and Prevention (ISPESL), joined in May 2010 into the National Workers' Compensation Authority (INAIL). Two main topics of activity can be identified: the first one concerns biological aspects and analysis of *in vivo* and *in vitro* effects of electromagnetic fields, the second one deals with engineering, exposure assessment and dosimetry. Biological studies are addressed to investigate potential effects of exposure to radiofrequency and ELF fields. As in 2009, an important research topic has been the study of possible effects of exposure to 900 MHz GSM RF fields on gene expression in human fibroblasts, and in particular the expression levels of the target genes, involved in cell stress response, neuronal differentiation and apoptosis processes.

Other studies have been carried out to ascertain the cytotoxic and genotoxic potential of Universal Mobile Telecommunication System (UMTS). Attention has been also devoted to combined exposures with RF radiation and chemical or physical agents.

At the ENEA, *in vivo* studies have been carried out on possible effects of 900 MHz GSM RF exposure on the immune system of adult animals, with findings showing no deleterious effects on several immune parameters and functions. More recently, these studies were extended to the effects of Wifi-like signals during early life with mice exposed during early post-natal or in utero life. Published results showed lack of early and late effects of *in utero* exposure to Wifi signals (even at high SAR levels) on the developing immune system.

As far as engineering aspects are concerned, specific projects have been launched to assess dosimetry in specific situations, with large interest for occupational exposure.

The National Institute for Environmental Research and Protection (ISPRA) has funded projects, mainly developed by CNR-IFAC, to address exposure from Radar systems, and more generally from complex signals sources.

Studies on the interaction between UHF fields from RFID and biological systems have been continued, as well computational research based on theoretical quantum mechanics in order to represent interaction mechanisms of exogenous electromagnetic fields at molecular and protein level.

Research on safety aspect of coupling or interference of environmental and occupational EMF with active and passive medical devices in the human body has carried on, as well studies on SAR distributions and temperature increments in pacemaker in phantoms exposed inside an MRI apparatus.

The program launched in 2009 by the former National Institute for Occupational Safety and Prevention (ISPESL), in cooperation with CNR-IFAC and ENEA, addressed to the assessment of occupational exposure during Magnetic Resonance Imaging clinical procedures has completed its first phase, and some results have been presented at EBEA workshop in Rome (February 2011), concerning measurements of gradient fields and calculation of induced currents and electric fields, also in the case of movement inside a space varying magnetic static field. The program is now being continued in the frame of a wider project on occupational safety for EMF technologies used in health facilities, funded by Ministry of Health and coordinated by INAIL, with participation of ISS, CNR-IFAC and ENEA.

Another program funded by Ministry of Health is aiming at the creation of a public national database of emission levels of equipment or devices used at workplaces, able to emit or produce exposure to physical agents, including EMF. A similar database already exists in Italy for sources of vibrations, and the program represents an improvement of its concept. The program is coordinated by INAIL, in cooperation with Tuscany regional authority, and local occupational safety and prevention Departments of Siena and Modena cities.

### **New policies and legislations regarding EMF exposure**

No relevant events have occurred in the last year, and no new policy or legislation act has been issued. The Directive 2004/40/EC had been transposed inside the national framework law on safety at work: Legislative Decree n.81 of 2008, published on April the 30th 2008 and amended on August 2009. The provisions on the protection from all physical agents, including EMF, are placed in Section VIII. A specific subsection is dedicated to EMF, but it will come into force in April 2012, according to the current deadline for transposition of Directive 2004/40/EC, that is however under revision. At the moment only general provisions for risk assessment of physical agents fully apply, and no binding exposure limit values for EMF are in force. This implies however that employers have the obligation to carry out an EMF risk assessment, and adopt the proper protection measures when necessary.

Following the publication of the Legislative Decree, a non-binding guidance to EMF risk assessment and management (in the style of FAQs), has been issued by the coordination body of regional OSH authorities and ISPESL (the National Institute for Occupational Safety and Prevention). The guidance adopts some basic concepts from CENELEC EN 50499 standard, and introduces two lists of equipment. The first one includes equipment for which the exposure levels are automatically compliant with the European Council Recommendation 1999/519/EC or the Directive 2004/40/EC; in this case the risk assessment procedure can be based on analysis of documentation and data sheet of the equipment present at the workplace. The second list includes equipment for which it is necessary to use a more accurate procedure to assess the exposure levels, with measurements and/or calculations.

The Ministry of Environment is currently working at regulatory acts concerning the institution of a national database for telecommunication plants and power lines, and the definition of rules for labeling of equipment emitting EMF.

## **Areas of public concern and national responses**

Few have changed since 2009. The major concern of the public remains focused on base stations for mobile phones and installation of new Wi-Fi network. Committees of “hypersensitive” subjects are very active, and their concern is mostly addressed to Wi-Fi new technologies. The national response, at central level, is mostly based on a communication strategy, see the paragraph below. It has however to be pointed out that the overall response of authorities, local and central, is far from being coherent. In the past years many local authorities issued very strict precautionary measures in contrast with national regulations. The conflict was resolved by the Constitutional Court (the supreme justice body in Italy) in favour of national regulation, but the situation is not yet completely defined and some conflicts still linger.

## **Public information activities**

The communication project “*Health and Electromagnetic Fields*”, promoted by the Ministry of Health and carried out by the National Institute of Health (ISS) was prolonged at the end of 2010, in order to take advantage of the latest scientific news (Interphone, new ICNIRP guidelines, etc.). The website of the project [www.iss.it/elet](http://www.iss.it/elet) is one of the richest in Italy and contains FAQs, detailed explanations, and over 50 documents, including many issued from WHO, translated in Italian.

Even after the end of the project, ISS decided to maintain the site active, with regular upgrading.

The Consortium Elettra 2000 continues to manage a website for public information, and relevant newsletters.