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General research activities related to EMF health:

A doctoral candidate from the University of Pretoria Faculty of Health Sciences collaborated with researchers from the Tshwane University of Technology, Tygerberg Hospital and the Finnish Radiation and Nuclear Safety Authority (STUK) in a study that looked at the effect of non thermal 900 MHz GSM radiation on human spermatozoa. Sperm propensity for acrosomal exocytosis was assessed by evaluating the acrosome reaction, using a new technique involving flow cytometry. 900 MHz GSM did not have any effect on the acrosome reaction, but certain motility parameters were altered. Sperm functionality was assessed also using flow cytometry, but no effect on any of the examined parameters was noted after 900 MHz GSM exposure at two different SAR levels (2 & 5.7 W/kg). It was concluded that the results showed that mobile phone radiation did not induce apoptosis. The ability of 900 MHz GSM radiation to induce a stress response was evaluated by heat shock protein (Hsp) activation. However, no Hsp27- or Hsp70-dependent stress responses were identified in human spermatozoa as a result of 900 MHz GSM exposure. Results from this study have been presented at the BEMS meetings in Ireland (2005), Mexico (2006) and Japan (2007). Papers have also been submitted during 2007 for publication in *Bioelectromagnetics*, *Radiation Research* and *Human Reproduction*.

The first South African Mobile Phone Symposium was held in Johannesburg from 7 to 9 October 2007 under the auspices of the South African Bureau of Standards and STUK from Finland. The theme was mobile telephony and its relation to health, compliance with standards, and precaution. Topics like the precautionary principle/approach and hypersensitive populations were vigorously debated. Joachim Schüz gave a very informative overview of the results of epidemiological studies involving mobile phones and cancer. Emilie van Deventer presented an overview of the International EMF Project's position and activities, and CK Chou discussed the ICES philosophy and practice with regard to RF exposure safety limits. The Symposium was rounded off with a broad panel discussion of policy matters and Barney de Villiers delivered the closing remarks.

New policies and legislation:

The process implemented in 2003 under the Hazardous Substances Act to control the non-medical application of electromagnetic fields by a process of licensing individual facilities was suspended on 18 November 2003 by the Director-General of the South African Department of Health, following objections by the mobile phone industry to certain areas of ambiguity in the current regulations. The Director-General therefore requested that a thorough analysis of the available internationally recognised guidelines for human exposure to electromagnetic fields be conducted. A systematic investigation of the regulatory control of electromagnetic fields internationally has since then been conducted on an on-going basis.

The model legislation adopted at the 2006 IAC meeting will be used as the basis for compiling new EMF regulations. These regulations will be developed in terms of new enabling legislation that will be promulgated to provide for mandatory control of ionizing and non-ionizing radiation. The sections of the current Hazardous Substances Act, which deal with the control of devices producing ionizing and non-ionizing radiation, will in due course be repealed. The telecommunications industry has been involved in continuing discussions with the Department of Health about the proposed new regulations. The RF health risk assessment by WHO will be a key component in finalising the upcoming EMF regulations.

A working group of the South African Bureau of Standards Technical Committee 73 was established to consider the development and adoption of standards related to the measurement and calculation of human exposure to time-varying electromagnetic fields. The standards developed in this regard by IEC TC106 and CENELEC TC106X can be adopted and overwritten as South African national standards, as and when appropriate.

Areas of public concern and national responses:

Exposure to base stations remains a definite concern of the general public. Queries from members of the public and community groups are handled on an individual basis and people are, as a rule, referred to the website of the International EMF Project, because this is also the Department of Health's primary source of information and guidance with regard to the health effects of EMF.

Several large metropolitan areas in South Africa (where the highest concentrations of cellular masts typically exist) have based the health aspect of their telecommunications infrastructure policies on the ICNIRP guidelines, following explicit recommendations by the Department of Health in this regard. Unfortunately, the current lack of comprehensive national regulations to effectively control public and occupational exposure non-medical EMF is not helpful at all for local authorities that have to deal with queries about their respective policies. However, the 1999 EUROBROCHURE on electromagnetic fields does offer some current assistance in this regard, as would the proposed new EUROBROCHURE on wireless communications.

New public information activities:

Although it is not yet a regulatory requirement, the largest network provider in South Africa has contracted an independent company over the past two years to establish a database of all its base stations around South Africa. Surveys, utilising spot and/or continuous measurements, have been carried out to obtain information on field strength values and how these values compare to ICNIRP guidelines. At this point in time, the data for more than 6000 base stations are available.