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Press Release

Conclusion of the National Research Programme "Non-Ionising Radiation - Health and Environment" (NRP 57)

Assessing the risks of wireless and mobile phone radiation more accurately

Electromagnetic fields and radiation produced by radio antennae or mobile phones can influence biological processes, for instance electrical brain activity during sleep, as researchers from the National Research Programme "Non-Ionising Radiation - Health and Environment" (NRP 57) have shown. However, they have not been able to establish any links between everyday exposure to radiation and health problems.

A total of five billion mobile phones were in use last year around the world, nine million of them in Switzerland alone - and there are daily more: the growth curve for mobile phone usage shows a steep rise. At the same time, other equipment and technologies associated with electromagnetic fields and radiation are also increasingly being used, for instance wireless Internet connections or cordless phones. What health and environmental impacts does this have?

No easy answers

Despite international efforts, to which the National Research Programme "Non-Ionising Radiation - Health and Environment" (NRP 57) has contributed over the past four years, there are still no easy answers to these simple questions. Some research projects within NRP 57 have confirmed that non-ionising radiation affects biological processes in cells and organs. With the help of cell culture experiments, they have discovered that radiation causes a slight increase in DNA strand breaks without, however, directly damaging the DNA. In another study, data on mobile phone usage and actual exposure to radiation among the population was collected for the first time. However, no link could be found between everyday exposure to radiation and ill-health in humans.

Neglected pregnancy

All in all, the research conducted under NRP 57 has not brought to light any alarming new facts that would necessitate changes to the law or intervention by the authorities. With one exception: until now, the protection needed by fetuses in the womb has not been given enough attention, as a modelling study has shown. Using numerical techniques, Niels Kuster and his colleagues from the IT'IS Foundation simulated the amount of electromagnetic radiation that reaches unborn babies in the third, seventh and ninth month of pregnancy. They thereby discovered that the radiation to which a foetus is exposed lies above the permissible threshold for the general public if the mother has maximum exposure at the workplace. In order to protect unborn children from undue exposure, product standards for technical equipment at the workplace - in particular, induction cookers - ought to be adjusted.

Changes in brain activity during sleep

A team led by Peter Achermann from the Institute of Pharmacology and Toxicology at the University of Zurich discovered changes to brain waves during sleep if the subject was exposed to the radiation of a half-hour mobile phone conversation before going to sleep. However, the changes in brain activity - as compared to feigned exposure in a control experiment - do not affect the structure and duration of the different sleep phases, nor do they detract from the subjectively felt quality of sleep.

Missing link between exposure and health symptoms

Martin Röösli's team from the Swiss Tropical and Public Health Institute in Basel conducted a survey in which more than 1,000 persons from the Basel region responded to questions about their health and quality of life. They then compared this data with the day-to-day exposure to radiation. The results show that the average exposure of 0.21 volts per metre lies far below the threshold set for Switzerland and that there is no link between the use of mobile phones or cordless phones and health disorders - not even for persons who describe themselves as highly sensitive to electromagnetic radiation.

Follow-up studies needed

It is still not clear whether the proven effects on the brain and on cells are relevant to the health of human beings. Further research might lead to a better understanding of how electromagnetic fields affect organs and organisms. Furthermore, it is important for research to keep pace with the rapid developments on the technology side. Follow-up studies are important - even after NRP 57 is wrapped up.

National Research Programme "Non-Ionising Radiation - Health and Environment" (NRP 57)

Since 2007, researchers of NRP 57 have assessed the health risks posed by our exposure to electromagnetic fields and non-ionising radiation in 11 different research projects. In the "Dosimetry and exposure assessment" module, researchers measured the electromagnetic fields produced by radio masts or mobile phones and calculated the amount of radiation absorbed by the human body; the "Laboratory studies and epidemiology" module looked at the short-term and long-term effects of non-ionising radiation; and the "Cell biology" module sought to track down molecular mechanisms of action. Finally, two sociological studies of the "Risk perception" module examined what the media and the public make of the risks of non-ionising radiation.

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This press release and three short interviews with researchers will be available on the website of the Swiss National Science Foundation as of 12 May 2011, 10.00 am: www.snsf.ch > Media > Press conferences