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Exposure from mobile phones, base stations and wireless networks

A statement by the Nordic radiation safety authorities

Introduction

Since the beginning of the 1990s, use of mobile phones has increased substantially and most residents of the Nordic countries utilise wireless communication systems as part of their everyday lives. Wireless communication technology is used for placing calls, sending text messages and transmitting data in multimedia applications.

Statement by the Nordic authorities

The overall data published in the scientific literature to date do not show adverse health effects from exposure of radiofrequency electromagnetic fields below the guidelines or limits adopted in the Nordic countries. However, epidemiological studies on long-term exposure to radio waves from mobile phones are still limited, especially studies on children and adolescents.

There are several ways to reduce exposure from mobile phones. This can for example be done by using a hands-free device or the mobile phone loudspeaker function while communicating. The exposure can also be reduced if the mobile phone is primarily used in areas with good coverage. Text messaging results in a very low level of exposure.

Since exposure of the general public, including children, to radio waves from the wireless local area networks and base stations is far below the exposure limits, there is no need to further limit exposure from these radio wave sources.

There will be some decades before studies of the association between lifelong use of mobile phones and chronic health problems will be available. Given the large number of mobile phone users, it is of great importance to monitor any potential impact on public health. This is why the Nordic radiation safety authorities are continuing to closely monitor research conducted on mobile phone use and any potential health risks.

Background

Exposure limits

In the Nordic countries, the exposure limits for radiofrequency fields including radiation from mobile phones, base stations, and wireless local area networks have been adopted from the recommendation of the Council of European Union (1999/519/EC). This recommendation is based on the exposure guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

Mobile phone exposure

National and international expert groups have conducted extensive reviews of available scientific publications in order to assess whether there is an association between exposure to radiofrequency electromagnetic fields and the risk of cancer and other chronic diseases.

In May 2011, the International Agency for Research on Cancer (IARC) of the World Health Organisation (WHO) reviewed the scientific literature on cancer risks and decided to classify radiofrequency electromagnetic fields as possibly carcinogenic to humans. This classification was mainly based on the results of a few epidemiological studies indicating an elevated risk of brain cancer among adult mobile phone users.

Since 2011, a number of epidemiological studies on mobile phone use and risk of brain tumours and other tumours of the head have been published. The overall data on brain tumour and mobile phone use do not show an effect on tumour risk. There is still limited data regarding risks of long-term use of mobile phones, longer than approximately 13-15 years. It is too early to draw firm conclusions when it comes to risk for brain tumours for children and adolescents, but the available literature to date does not show an increased risk.

New epidemiological studies have also addressed a number of other health outcomes than cancer. Some effects have been observed, but methodological limitations prevent firm conclusions in terms of causal associations. Also, the number of studies for each outcome is relatively small, and consistency between various studies cannot be addressed.

Exposure from base station transmitters and wireless local area networks

Global wireless communication technology is based on an extensive network of base stations that transmit and receive data using signals based on radio waves. Wireless local area networks (WLAN, Wi-Fi) also use radio waves for communication. Recent surveys have shown that despite the sharp increase in applications using wireless technology, the level of radio wave exposure in public outdoor areas as well as indoor in schools, offices and dwellings is far below the exposure limits.

References

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