



Non-Ionizing Radiation & Children's Health

International Joint Workshop
18 - 20 May 2011, Ljubljana, Slovenia

POSTER

PLATFORM PRESENTATION

RF Personal Exposimetry On Employees Of Elementary Schools, Kindergartens And Day Nurseries As A Proxy For Child Exposures

Péter JUHÁSZ, JÓZSEF BAKOS, GYÖRGY THURÓCZY

National Research Institute for Radiobiology and Radiohygiene, Budapest, Hungary

Personal exposimetry, that is, the use of specialized, wearable compact devices to measure the actual exposure of real people in real situations caused by mobile phone networks and other RF sources has been in the focus of the bioelectromagnetics community for quite a few years now. With a few exceptions, exposimetry studies focused on adults, because measuring the exposure of children, one of the most important target groups, introduces a number of complications.

The main feature of our study is to select teachers and kindergarten caretakers as the measured volunteers. They are expected to receive the same exposure pattern as the children (at least from base stations and DECT/Wi-Fi sources) as they spend the workday in close proximity to them. Thus they can stand as useful proxies for estimation of child exposures. This alleviates a number of problems that may come up with studies that use children as subjects (increased risk to PEM units, requirement of explicit parental consent).

Volunteers belonging to one of two groups (teachers and employees of elementary schools, n=30; employees of kindergartens (with children aged 3–6) and day nurseries (children aged 1–3), n=50) in Budapest (four selected districts) and three other towns in Hungary received a Personal Exposimeter (PEM) for 24 hours each. Only workdays were considered, that is, each 24h period included a stretch of time when the volunteers were working with children. 60 measurements were made in 2009 and 20 more in 2010.

The volunteers wore the PEMs on their bodies in a belt pouch. Two Satimo EME Spy 121 units and one Antennessa DSP 90 unit was used with a sampling interval of 15 or 30 seconds. In all cases the volunteers kept an exposure diary in which they recorded whatever they were doing during their normal workday. Their activities were assigned into 5 distinct types: Work, Home, Sleep, Travel and Miscellaneous. For the purpose of this study only work exposures were considered.

Selected results: Highest exposures were dominated by GSM handsets. In base station bands the majority of data points (66% in GSM900 band) were below the detection limit (0.05 V/m), while the maximal (6-min averaged) exposures in that band were 0.59 V/m for teachers and 0.72 V/m for kindergarten caretakers. Comparison of 2009 and 2010 data indicates an increase in exposure, especially in the DECT and Wi-Fi bands.