



Risk Management and Prevention- poster review

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Legal Approach To The Subject Law 11.934 that establishes ICNIRP

Levels of exposure to ELF EMF in Brazil

V.L.S.Bulcao

The discussion of health environmental and socio- political issues concerning the effects of EMF in Brazil spanned over a 12 y period.

- **Federal Law 11,934 (2009)** issued - aims to protect the general population and workers, recommending the ICNIRP guidelines as stated in "*Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields up to 300 GHz*", should be adopted.
- The National Agency of Electric Energy (ANEEL) issued a standard **Normative Resolution No. 398 (2010)** limiting human exposure to electric and magnetic fields, at 60 Hz.

Compliance Procedure of the Transmission System with new ELF Standard

The Brazilian Transmission System

The Brazilian electricity transmission system is integrated and is one of the four largest in the world. It has currently 176,000 km of transmission lines.

Of this total, around 20,000 km belong to the basic network of Eletrobras Furnas, which serves eight states and the Federal District with transmission voltages, of 138, 230, 345, 500, 750 and 600 kV DC (ITAIPU-SÃO PAULO).



- Compliance with RL
- If RL not met a technical report required to ensure compliance with BR.
- all information on EMF exposure from equipment and power lines published on National Agency of Electric Energy's website.
- **Results:** Based on simulations and calculations for magnetic fields of the network of *Eletrobras Furnas*
 - RL compliance for general population
 - some non compliance with RL in occupational settings, in which BR were met
- Public concern reduced after introduction of regulation and standard



Teen-agers' sun bed use in Sweden 2010.

U. Wester, H. Asp, J. Gulliksson

In yearly investigations (2005-2010) of the adult population's tanning habits, sun-bed use in the youngest age group (18-24 y) was high (40%) skin burns (10-20%).

- The Swedish Radiation Safety Authority (SSM) financed a study of sun-bed habits among teen-agers under the age of 18 years.
- The survey consisted of telephone interviews among 500 randomly selected teen-agers of age 16 – 17 all over Sweden.
- The teen-agers were asked about:
 - 1) any (ever) use of sun-beds in last two years,
 - 2) age 1st time,
 - 3) number of times in last 12 months,
 - 4) questions on reasons for use and awareness of risk.

Results and Recommendations

Average ever use of sun-beds was high for girls 75% (boys 25%)

Girls started earlier than boys (at 14y-33%,18%).

30% of girls and boys used sun-beds more than 6 times within the year

- 40% had used them 2-5 times
- 30% only once.
- Awareness of risks was high (non users 75%, users 47%).
- Sun-bed use was high among adolescents (average of 40%)
- Sun-bed burns were common (10-20%)

Recommendations

- The need to include the **prohibition of use, sale or hire of sun-beds to people below 18 years of age** was identified (as recommended by the Nordic Radiation Safety Authorities in 2009).
- Recently a governmental committee, examining prospects of harmonizing Swedish Laws on nuclear technology and radiation protection, has proposed a new law/rule **banning commercial solarium operators from making cosmetic sun-beds available to those under 18 y.**



Sun Protection Factors – 7 tips for Safer Playgrounds and Healthier Children. *J. Gulliksson, H. Asp, C. Boldemann*

- The Swedish Radiation Safety Authority has together with the County Administrative Boards produced **a brochure** with information and tips on how to design the outdoor environment to protect children from over-exposure to UV-radiation (April 2011).
- The brochure is part of the process to achieve a safe radiation environment and is meant to be a **support for local authorities and others who are planning school grounds, preschool playgrounds and parks.**




Tips for Safer Playgrounds and Healthier children.

Trees/bushes and other vegetation can be used to reduce the exposure to UV radiation.

A large area with vegetation will not only reduce UV exposure but will increase the movement of children.

- The environment around children should be hilly and contain loose objects such as tree trunks, mounds, bushes etc. This promotes physical activity and protection against the sun.
- Fences around playgrounds can be placed in such a way that children will be able to move unhindered between sunny areas and shade.
- Playgrounds should be placed facing E – to enable morning sun, with trees/bushes placed SW for protection during mid day.
- When placing playground facilities ensure siting so that
 - when looking from below at the sky less than 50% is open sky.
 - an appropriate amount of time can be spent in sun and shade



Children sun protection need not conflict with health promoting physical activity-
KIDSCAPE – A study of preschooler Outdoor Environments in Sweden and
North Carolina.


C. Boldemann , B. Bieber , M. Blennow, N. Cosco, H. Dal , R. Moore, F. Mårtensson , P. Pagels , A. Raustorp , M. Söderström , U. Wester

- Preschool children's sun exposure was measured during 2009 with UV-dosimeters at 9 preschools in Malmö (55°N) in southern Sweden and at two in Raleigh (36°N), North Carolina, USA at comparable seasons.
- Outdoor playground environment was explored: in order to assess whether and how play facilities, available space and vegetation influenced UV-exposure.
- Children's physical activity was measured with pedometry.



Results

- In Malmö access to spacious outdoor play settings with vegetation, decreased sunburn risk and increased physical activity during children's free play in May, also during long outdoor stay.
- Results from Raleigh in April also indicate that vegetation is sun protective when children play.
- **Well-planned favorable outdoor environments may promote both self triggered sun protective behavior and physical activity in preschool children in a Nordic spring- or summer climate.**
- This confirms previous Swedish findings.
- However **at a mid-latitude, the promotive effect for physical activity may not be so pronounced due to the role of climate and associated factors.**



The Information system EMF- portal: Overview of Scientific Publications on Children's Health and Non Ionizing Electromagnetic Fields

D. Dechent

The internet information system "EMF-Portal" provides publication data of all published scientific studies in the area of bio-electromagnetic interaction and detailed summaries on experimental medical/biological as well as epidemiological studies in the whole range of NIR EMF (www.emf-portal.org)

- A sophisticated search tool enables finding publications on specific endpoints within different frequency ranges. Keywords are linked with the glossary whereby similar words are automatically included.
- Up to now, approximately 14,000 papers published in the last 30 years, mainly from peer-reviewed scientific journals, have been collected in the database, categorized into different subjects as well as frequency ranges and are provided online with their bibliographic data.
- Detailed summaries of about 2,180 out of 5,960 experimental medical/biological studies and about 210 out of 560 epidemiological publications exist.



Specific search strategies for locating publication on children's health .

- The search for **epidemiological studies on children** reveals publications with **different endpoints**: childhood cancer, childhood leukemia, behavioral problems and cognitive function.
- Search can also be focused on specific **exposure sources**, e.g., power transmission lines, railroad traffic (ELF), mobile phones or radio and television transmitters (RF)
- Additionally, medical/biological studies can be searched for **prenatal or postnatal exposure on different endpoints**.
- The EMF-Portal may also be used as an instrument for scientists and policy makers for future research directions.



Thank you!



Survey of ELF and RF electromagnetic fields in living spaces in Serbia.

B. Vulevic

A summary of environmental “spot” broadband measurements of ELF (50 Hz) and RF (100 kHz – 3 GHz) EMF is presented in over 35 municipalities in Serbia.

- These were initiated by the public requesting information on general public exposure levels to time-varying EMF in living spaces.
- Measured values were well below the recommended levels ICNIRP guidelines.
- More data (meteorological conditions, evaluation of uncertainty in the measurement etc.) is needed in the future to enable a more precise monitoring system of measurements in sensitive” places (residencies, nursery schools, junior schools, hospitals etc.).
- This should also enable a more precise evaluation of the relevance of these exposure levels to possible health effects.