



IC1301 -WiPE

Wireless Power Transmission for Sustainable Electronics

**WG5 – “Regulation and Society
Impact”**



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Agenda

- » Human health risks
- » Regulations
- » Agenda of ideas



Human health risks (according ICNIRP)

Frequency



Effects on human body
through alternating field
exposition

Stimulus of the peripheral
nerves through eddy
currents, also known
under „Current Density“
or „Internal electrical
field“

Heating of human tissues
through energy
absorption, also known
under „SAR“

EM-Limits are
necessary !

What is ICNIRP ? Visit www.icnirp.de

- » Is an international organization under the WHO, which collects scientific informations, studies, publications and so on for setting up **recommendations** to insure human health under the impact of non-ionizing radiation
- » The **recommendation** is normally used by national authorities for setting up **regulations**.
- » The EM limits of the national derivations could be less than the recommendation of the ICNIRP !
- » Passive or active implants are not part of the recommendations

Regulations for WP systems – Complex topic

» Depends on the application

- > Medical
- > Automotive
- > Industrial
- > Consumer

» Depends on the frequency

- > Without communication part of the testing standard / application
- > With communication part of e.g. ETSI

Long-term health effects - WHO

International Agency for Research on Cancer



World Health Organization

PRESS RELEASE
N° 208

31 May 2011

**IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS
POSSIBLY CARCINOGENIC TO HUMANS**

Group1: The agent is carcinogenic to humans.

Group 2A: The agent is probably carcinogenic to humans.

Group 2B: The agent is possibly carcinogenic to humans.

Group3: The agent is not classifiable as to its carcinogenicity to humans.

Group 4: The agent is probably not carcinogenic to humans.

Long-term health effects - Discussion

American Cancer Society (ACS):

'The IARC classification means that there could be some risk associated with cancer, but the **evidence is not strong enough** to be considered as causal and **needs to be investigated further.**'

National Institute of Environmental Health Sciences (NIEHS):

'The weight of the current scientific evidence **has not conclusively linked** cell phone use with any adverse health problems, but **more research is needed.**'

Food and Drug Administration (FDA):

'Studies reporting biological changes associated with radiofrequency energy have failed to be replicated and the majority of human epidemiologic studies **have failed to show** a relationship between exposure to radiofrequency energy from cell phones and health problems.'

Centers for Disease Control and Prevention (CDC):

'Although some studies have raised concerns about the possible risks of cell phone use, scientific research as a whole **does not support** a statistically significant association between cell phone use and health effects.'

Federal Communications Commission (FCC):

'**There is no scientific evidence** that wireless phone use can lead to cancer or to other health problems, including headaches, dizziness or memory loss.'

Long-term health effects – More research



2010

RF Research Agenda High-Priority Recommendations:

Epidemiology: cohort studies children and adolescents on behavioral and neurological disorders and cancer

Human studies: RF EMF provocation studies on children

Animal studies

Dosimetry: Exposure scenarios and levels for new and emerging RF technologies

Agenda of ideas

**What would be task of the WG5
in your opinion ?**

**What would be the social impact
in your opinion ?**