



ELECTROSMOG POLLUTION

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Introduction

- Working in Doron Net d.o.o.
- Head of DN Laboratory
- Doron Net is a member of Croatian Standards Institute
- participating in different Croatian TC including HZN/TO 552, *Društvena odgovornost*, mirroring TC to ISO/TMB/WG *Social Responsibility*



Introduction

- Conducting measurements of:
 - high and low frequency electromagnetic emissions and radiations
 - occupational and environmental noise exposures
- described in ISO/FDIS 26000 Social responsibility, chapters
 - 6.4.6 Labor practice issue 4: Health and safety at work
 - 6.5.3 Environmental issue 1: Prevention of pollution



Pollution

- Classic and visible:
 - Water
 - Air
 - Soil
 - ...

- Modern and not visible:
 - Non-ionizing radiation
 - Ionizing radiation (UV light, X-rays and gamma rays - a form of radioactivity)
 - Vibration
 - Noise
 - ...



Sources of EMF pollution - ELECTROSMOG

- High frequency electromagnetic fields (EMF)
 - Radio and TV transmitting antennas
 - RADAR stations
 - Mobile phone transmitting antennas
 - Cordless phones and cordless baby alarms
 - Wireless networks...
- Low frequency electromagnetic fields (EMF)
 - High voltage wires
 - Electric transport and converting facilities (transformators ...)
 - Overhead Transmission Line Towers



Measurements

- **ELECTRIC FIELD STRENGTH** (E) is the magnitude of a field vector at a point that represents the force (F) on a positive small charge (q) divided by the charge; expressed in units of volt per meter (V/m)
- **POWER FLUX DENSITY** (S) is power per unit area normal to the direction of electromagnetic wave propagation; expressed in units of watt per square meter (W/m^2)
- **SPECIFIC ABSORPTION RATE** (SAR) is the power absorbed per kilogram of body weight; expressed in units of watt per kilogram (W/kg)
 - FCC – US Federal Communications Commission
<http://www.fcc.gov/oet/ea/fccid/>



Health influence

- cumulative from all sources
- cumulative from all frequencies
- no visual warning
- time exposure
- not enough medical experiences and researches



Social responsibility

- National regulations - electromagnetic fields (EMF)
- Problem of cumulative influence (sources, frequencies), not enough described in regulations
- European regulations – Croatia wishes to join EU, implementation of EU regulations (pro/contra; see Table 1)



European / Croatian legislation

Table 1 Reference levels for exposure to time varying electric fields

Regulations		Exposure	Frequency [MHz]	Electric field [V/m]
Croatian regulations : •Ministry of Health (NN 204/03, 15/04 and 41/08) and •Ministry of the Sea, Tourism, Transport and Development - Croatian post and electronic communications agency (NN 183/04)		Occupational	400 - 2000	$1,375f^{1/2}$
			925	41,82
		General public	400 - 2000	$0,55f^{1/2}$
			925	16,73
ICNIRP (International Commission on Non-Ionizing Radiation Protection)	DIRECTIVE 2004/40/EC of the European parliament and of the Council	Occupational	400 - 2000	$3f^{1/2}$
			925	91,24
	COUNCIL RECOMMENDATION 1999/519/EC	General public	400 - 2000	$1,375f^{1/2}$
			925	41,82



Future steps

- Using researches and medical documentation to improve standards
- Using standards to improve regulations
- Monitoring, including measurements in-situ



Conclusion

Social responsibility through:

- Awareness of new kind of pollution
- Research and medical documentations
- Improving standards
- Improving regulations by using standards
- Monitoring and measurements
- Public opinion and public demand for better protection of health and life



Thank you!



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