

Scientific Studies / Wiss. Studien / Estudios científicos

- (1) Collections of Studies
 - (2) Overviews
 - (3) Meta-Analysis
 - (4) Stories about particular studies
 - (5) Single Studies
 - (6) Methodological Problems of Epidemiologic Studies
 - (7) Models of the impact of EMR on the (human) organism
- Commentaries and Excerpts

(see also (2) "Overviews")

(see also (3) "Meta-Analysis")

(1) Collections of Studies

346 publications scientifiques par ordre chronologique	teslabel.be 1973 – 2009
Comité Scientifique sur les Champs ElectroMagnétiques »Il y a évidences scientifiques montrant l'existence d'effets des champs électromagnétiques sur l'être vivant à faibles doses.« »Il y a évidences médicales montrant l'existence d'effets des champs électromagnétiques sur l'homme.« »Il y a des évidences montrant que les rapports officiels sont incomplets.«	2003 – 2004
<u>NCBI > Literature > PubMed</u> A huge database !! Enter for example "electromagnetic radiation" in the search box > see i.a. "electromagnetic radiation and cancer" > Search > see 31 665 results. Specify to "electromagnetic radiation and brain-cancer" > see 1215 results.	
<u>Powerwatch Article Library</u> includes a lot of Scientific Studies !! (details see below) 28/06/2015 - April 2015 - Science Update = summary of 20 latest papers	
<u>EMF-Portal</u> »...summarizes systematically scientific research data about the effects of electromagnetic fields (EMF).«	Aachen University
<u>Bioinitiative 2012 / 2014</u> (details see below) 29 scientists from 10 countries (Rapport BioInitiative Traduction Française)	2012, 2014, 2015
Research database for studies on the effects of electromagnetic fields of mobile (non-ionizing radiation) (select language)	Diagnose Funk
34 estudios contundentes sobre los efectos y radiaciones del wifi	Joan Carles López 04Aug2015
Mobilfunk-Newsletter – EMF-Omega-News	Google Group

You'll find the latest news here including scientific studies and comments	
“Why We Need Stronger Cell Phone Radiation Regulations—Key Research Papers Submitted to the FCC” Part II	saferemr.com 04Aug2014
“Biological and Health Effects of Microwave Radio Frequency Transmissions” A Review of the Research Literature. <i>Contains o bulk of Scientific Studies</i> Paul Dart e.a. 4Jun2013	
„Studies“ The Prove-It Initiative lists more than 5000 peer reviewed medical studies proving EMF induced health issues.	2010
“The Work of Leif Salford” <i>Lists several important studies by Leif Salford on EMR effects.</i>	Cellular Phone Task Force 1997 - 2009
„Do You Have Microwave/EMR Sickness? “ see Foot- & Endnotes	Doyon PR 04Feb2007

(2) *Overviews in chronological order*

[see also \(3\) “Meta-Analysis”](#)

Powerwatch Article Library

contains a lot of fantastic overviews over the scientific literature, e.g. on :

- > Powerfrequency EMFs and Health,
- > Substations, Powerlines and Related EMFs,
- > Your low EMF home,
- > Radiofrequency EMFs and Health,
- > Mobile Phones,
- > Children and Mobile Phones,
- > Electrical Hypersensitivity, ... *in particular:*

[Childhood Cancer, Section 4](#) Non-Ionising Radiation – Electromagnetic Fields (EMFs)

[Mobile Phones, Section 3](#) Brain Tumours and other Cancers

Bioinitiative 2012 / 2014: „A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Fields (ELF and RF)“, presented by 29 scientists from 10 countries: Topics:

»Overall, these 1800 or so new studies report abnormal gene transcription; genotoxicity and single- and double-strand DNA damage; stress proteins because of the fractal RF-antenna like nature of DNA; chromatin condensation and loss of DNA repair capacity in human stem cells; reduction in free-radical scavengers – particularly melatonin; neurotoxicity in humans and animals; carcinogenicity in humans; serious impacts on human and animal sperm morphology and function; effects on offspring behavior; and effects on brain and cranial bone development in the offspring of animals that are exposed to cell phone radiation during pregnancy. This is only a snapshot of the evidence presented in the BioInitiative 2012 updated report.«

[see Research Summary 2014](#) [see Conclusions updated March 2014](#)

[see Comment on SCENIHR 12Apr2014](#) [see Consultation on WHO Dec2014](#)

[see Submission on SCENIHR 07May2015](#) [see Abstracts EHS 28Nov2012](#)

2012, 2014, 2015

“Electromagnetic fields and possible harmful health effects”	Akbaba M & Gökdeniz M	20Jul2015
“Can Cell Phones Increase Risk for Brain Cancer?” <i>Alternatively, search for the title at Google</i>	medscape.com	4Mar2015
“ Electromagnetic Hypersensitivity – A Summary ”, <i>excellent overview!</i> <i>contains numerous references</i>	Dr. Erica Mallery-Blythe	Dec2014
“Evaluation of ADHS Report on Health Safety of Smart Meters” Sedona Smart Meter Awareness:	Monnie Ramsell & Nancy Baer	09Dec2014
“Effect of mobile telephones on sperm quality: A systematic review and meta-analysis”	Jessica A. Adams e.a., UK & Brazil	10Jun2014
“WiFi Report - Humanity At The Brink “	Barrie Trower	01Sep2013
“Cell Phones & WiFi – Are Children, Fetuses and Fertility at Risk?”		29Aug2013
“Biological and Health Effects of Microwave Radio Frequency Transmissions” A Review of the Research Literature, WiFi in Schools:	Paul Dart e.a.	4Jun2013
“Wi-Fi technology – an uncontrolled globalexperiment on the health of mankind”	Marko Markov & Yuri G. Grigoriev	01Jun2013
“Electromagnetic and Radiofrequency Fields Effect on Human Health“	AAEM: The American Academy of Environmental Medicine	4Dec2012
“Cell phone radiation: Evidence from ELF and RF studies supporting more inclusive risk identification and assessment”	Carl Blackman	21Jan2009
“Attitudes to the health dangers of non-thermal EMFs” (see pages 27 - 31)	Michael Bevington	Jan2008
“¿Pueden afectar las microondas pulsadas emitidas por las antenas de telefonía a los árboles y otros vegetales?”	AEET A.Balmori	Sep2004

(3) Meta-Analysis[see also \(2\) “Overviews”](#)

“The discrepancy between maximum in vitro exposure levels and realistic conservative exposure levels of mobile phones operating at 900/1800 MHz”	Schmid G, Kuster N	30Jan2015
„Electromagnetic fields from wireless communications and health – ‘Scientific proof’ versus ‘observation’ and ‘experiences’“	Leendert Vriens	19Jan2015
“Effect of Mobile Telephones on Sperm Quality: A Systematic Review and Meta-Analysis”	Jessica A. Adams e.a., UK & Brazil	10Jun2014

“Electromagnetic Hypersensitivity: Fact or Fiction“ Genuis SJ & Lipp CL, Canada 1Nov 2011
Die Autoren sind Spezialisten für das MCS = Multi-Chemical Syndrome und das CFS = Chronic-Fatigue Syndrome, also für Multisystemerkrankungen, und stellen fest, dass es EHS = Elektromagnetische Hypersensibilität wirklich gibt.

“Radiation Research” and The Cult of Negative Results” The results of scientific investigations into the effects of non-ionizing EMR are highly dependent on whether the study is sponsored by industry or not. Microwave News 31Jul2006

„DNA bricht je nach Sponsor: Mobilfunk-Forschung ad absurdum“ *Zwei Autorentams USA/Schweiz lasen 85/59 Studien, die Wirkungen von EMF auf das Erbgut untersuchten und fanden in den Industrie-finanzierten Studien nur 1/10 so oft signifikante, gesundheitsschädigende Effekte.*
(more about this topic see above) Diagnose Funk 29 Oct 2006

„Vorsorge aufgrund so genannter a-thermischer Wirkungen von HF-EMF“*
Beste Übersicht über DNA-Brüche, u.a. in der Reflex-Studie 2000-2004 = 12 Forschergruppen aus 7 europ. Ländern, und weitere in vitro- und Tierversuche. Mosgoeller,W. Sept2010

(4) Stories about Single Studies

- > A. Lerchl e.a. 2015
- > CERENAT Study 2014
- > Hardell, L. e.a. 2013
- > WHO Study 2011
- > Interphone Study 2010
- > REFLEX Study 2007

Lennart Hardell & Michael Carlberg (e.a.)

“Electromagnetic hypersensitivity - an increasing challenge to the medical profession” 15Sep2015

“Pooled analysis of Swedish case-control studies during 1997- 2003 and 2007-2009 on meningioma risk associated with the use of mobile and cordless phones” Hardell L & Carlberg M 27Apr2015

“Increasing Rates of Brain Tumours in the Swedish National Inpatient Register and the Causes of Death Register” Hardell L & Carlberg M 13Feb2015

“Mobile phone and cordless phone use and the risk for glioma” – Analysis of pooled case-control studies in Sweden, 1997–2003 and 2007–2009, Lennart Hardell & Michael Carlberg 28Oct2014

“Sharp increase in patients treated for brain tumors with unclear diagnosis in Sweden” 20Oct2014

“Using the Hill viewpoints from 1965 for evaluating strengths of evidence of the risk for brain tumors associated with use of mobile and cordless phones” Lennart Hardell & Michael Carlberg 06Nov2013

“Case-control study of the association between malignant brain tumours diagnosed between 2007 and 2009 and mobile and cordless phone use” L. Hardell e.a. 24Sept2013

“Pooled analysis of case-control studies on acoustic neuroma diagnosed 1997-2003 and 2007-2009 and use of mobile and cordless phones” [see also](#) Hardell, L. e.a. 22Jul2013

“Use of mobile phones and cordless phones is associated with increased risk for glioma and acoustic neuroma” Hardell, L. e.a. 15Nov2012

Powerwatch: “Brain tumours and EMFs” *Contains an excellent review of Hardell’s and some other studies on brain tumours including common flaws of these and other case-control studies.*

A. Lerchl e.a. 2015

“Pandora Press Release Lerchl Waterloo” Pandora Press 06Aug2015

Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans A. Lerchl e.a. 17Apr2015

Ny forskning om radiofrekvent stråling og kreft tvinger mobilindustrien i knestående <http://www.felo.no/hjem/> 19Mar2015

“RF Cancer Promotion: Animal Study Makes Waves Germany’s Alex Lerchl Does a U-Turn” microwavenews.com 14Mar2015

„RF EMFs produce clear co-carcinogenic effects“ powerwatch.org.uk 8Mar2015

„Higher tumor rates through exposure to electromagnetic fields“ Jacobs University 6Mar2015

„Tumorpromotion durch hochfrequente elektromagnetische Felder in Kombination mit kanzerogenen Substanzen - synergistische Wirkungen“ (engl. summary) Klose, M. Dec2014

„Indication of cocarcinogenic potential of chronic UMTS-modulated radiofrequency exposure in an ethylnitrosourea mouse model“ (see also) Tillman, T. e.a. Jul2010

[see below: REFLEX study](#)

CERENAT Study 2014

“The epidemiology of glioma in adults: a “state of the science” review” LL Morgan 20Jan2015

Author’s response: Re ‘Mobile phone use and brain tumours in the CERENAT case-control study’ The British Medical Journal: G. Coureau e.a. 11Nov2014

“Re: Mobile phone use and brain tumours in the CERENAT case-control study” The British Medical Journal: L. Hardell & M. Carlberg 11Nov2014

“New study confirms increased risk for gliomas associated with use of mobile phone” Lennart Hardell’s Blog 12May2014

“Mobile phone use and brain tumours in the CERENAT case-control study” The British Medical Journal: G. Coureau e.a. 9May2014

WHO Study 2011

“Lancet Oncology updates conflicts of interest statement for cancer-cell phone paper” Retraction Watch 24Jun2015

“Correction to Lancet Oncol 2011; 12: 625” The Lancet Jun2015

“Carcinogenicity of radiofrequency electromagnetic fields”

The Lancet Jul2011

Interphone Study 2010

- “Social and Economic Patterning in the Interphone Study” Sean AP Clouston 6Jan2011
- “A Look at the Interphone Study Results” Saracci & Samet,
12Apr2010
- “Brain Tumour Risk in Relation to Mobile Telephone Use**
– Results of the INTERPHONE International Case–Control Study” 8Mar2010
- “Estimating the risk of brain tumors from cellphone use: Published case-control studies”
specifies 11 flaws of the Intephone Study L.L. Morgan, 30Jan2009
- Powerwatch: “Brain tumours and EMFs”
Contains an excellent review of the Interphone study and some other studies on brain tumours induced by EMR, including common flaws of these and case-control studies in general. 2008

REFLEX Study 2007*The project has been funded by the European Union.**The study was performed from start-date 01Feb2000 to end-date 31May2004.*

- „Lo inesperado siempre sucede. Franz Adlkofer” M Del Mar Rosa 26Mar2015
- “The Unexpected Always Happens – A painful lesson for the notorious slanderer Alexander Lerchl, and even more for industry and politics who used his ‘expertise’ for many years” 9Mar2015
- „Los resultados del estudio REFLEX, judicialmente confirmados” Hugo 26Mar2015
- „REFLEX-Studie juristisch bestätigt“ diagnose-funk.org/ 24Mar2015
- „Endurteil: Kratochvil gegen Lerchl“ Hamburger Landgericht 20Mar2015
- „Zwischenbericht 2: Kratochvil gegen Lerchl“ Stiftung Pandora 13Mar2015
- „Elisabeth Kratochvil verklagt Professor Alexander Lerchl und das Laborjournal wegen Ehrverletzung“ 10Nov2014
- “Le scandale des données scientifiques falsifiées de Vienne: Une histoire qui a été inventée afin de se débarrasser des résultats des recherches sur les effets biologiques des rayonnements générés par les téléphones mobiles” 10Nov2009
- “The scandal surrounding faked data in Vienna: A story that has been invented in order to get rid of research results on the biological effects of mobile radiation” 10Nov2009
- “Risk Evaluation of Potential Environmental Hazards From Low Frequency Energy Electromagnetic Field Exposure (using sensitive in vitro methods)” next-up.org/NewsOfTheWorld 9Nov2009
- “Risk Evaluation of Potential Environmental Hazards from Low Energy Electromagnetic Field Exposure Using Sensitive in vitro Methods”** Adlkofer F 29Sep2007

„Ergebnisse aus dem REFLEX-Projekt“ (= detailed results in German) Adlkofer F 2Dec2004

[see above: A.Lerchl](#)

(5) Single Studies

Because you'll find outstanding compilations of scientific studies [above](#), here we only mention some studies which came to our attention whilst working on the subject.

[see also "Overviews"](#)

[see also "Meta-Studies"](#)

[see also Smart Meters](#)

[see also Wifi at School](#)

(5A) Single Studies 2015

(5B) Single Studies 2014

(5C) Single Studies earlier than 2014

(5A) Single Studies 2015

„Hochspannungsleitungen: Auswirkungen auf den Hormonspiegel“	heilpraxisnet.de 20Sep2015
„The implications of non-linear biological oscillations on human electrophysiology for electrohypersensitivity (EHS) and multiple chemical sensitivity (MCS)“	Sage C., 12Sep2015
“The Emerging Link between Wireless and Autism”* contains several links to accordant studies	clearlightventures 11Sep2015
“Effects of acute exposure to WIFI signals (2.45 GHz) on heart variability and blood pressure in Albinos rabbit”	Environmental Toxicology and Pharmacology, Linda Saili e.a., 02Sep2015
“UCLA researchers provide first evidence of how obstructive sleep apnea damages the brain”	1Sept2015
“Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression.”	ML Pall 20Aug2015
“Harmful Effects of GSM Waves Demonstrated on Ants and Protozoa”	mieuxprevenir 23Jul2015
„Effets nocifs des ondes GSM mis en évidence sur des fourmis et des protozoaires“	teslabel.be 12Jul2015
„Effets nocifs des ondes GSM mis en évidence sur des fourmis et des protozoaires“ Video / Etude	robindestoits.org RTL.be 11Jul2012
“Study explores life-changing impact of near death” <i>including increased electromagnetic sensitivity and an intolerance of loud noise and bright light</i>	Nicole Lindsay 21Jul2015
“Real versus Simulated Mobile Phone Exposures in Experimental Studies”	Dimitris J. Panagopoulos, Olle Johansson, and George L. Carlo Athens/Greece & USA 14Jul2015
“Prevalencia de insomnio en adultos de 18 a 60 años de edad y exposición a campos electromagnéticos en hogares de Barranquilla, Colombia”	

Instituto Nacional de Salud Bogotá, D.C., Colombia, S.A.2015	
“Effects of Wi-Fi (2.45 GHz) Exposure on Apoptosis, Sperm Parameters and Testicular Histomorphometry in Rats: A Time Course Study”	Shokri S. e.a. 11Jul2015
Yakymenko e.a., Lai, Levitt on Oxidative Stress: see above !	07Jul2015
“Chronic fatigue breakthrough offers hope for millions”	New Scientist 01Jul2015
“Antibody wipeout relieves symptoms of chronic fatigue syndrome”	New Scientist 01Jul2015
This discovery may be of interest for EHS as well.	
“International policy and advisory response regarding children’s exposure to radio frequency electromagnetic fields (RF-EMF)” (also here) (see also)	Redmayne M 19Jun2015
“EEG Changes Due to Experimentally Induced 3G Mobile Phone Radiation”	PLoS One 8Jun2015
“Effect of mobile phone use on metal ion release from fixed orthodontic appliances”	...Jun2015
“Effects of 2.4 GHz radiofrequency radiation emitted from Wi-Fi equipment on microRNA expression in brain tissue.”	Dasdag, S. e.a. 20May2015
“Efectos contundentes del wifi de 2,4 Ghz en el cerebro y la relación con el Alzheimer” (= resumen)	Joan Carlos López 01Apr2015
“Radio Hazard Safety Assessment for Marine Ship Transmitters: Measurements Using a New Data Collection Method and Comparison with ICNIRP and ARPANSA Limits”	Halgamuge MN 19May2015
“Does the Brain Detect 3G Mobile Phone Radiation Peaks? An Explorative In-Depth Analysis of an Experimental Study”	Roggeveen S e.a. 11May2015
"Cognitive impairment and neurogenotoxic effects in rats exposed to low”	Deshmukh e.a. 5May2015
“Epidemiological investigation of risk factors of the pregnant women with early spontaneous abortion in Beijing”	Zhou LY e.a. 14Apr2015
“Mobile Technology's Blue Light Still Suppresses Sleep Hormone Melatonin, Affecting Human Biology”	Stephanie Castillo medicaldaily.com 21Mar2015
“Bacterial growth rates are influenced by cellular characteristics of individual species when immersed in electromagnetic fields” (Abstract)	Tessarò LW Microbiol Res Mar2015
“Study Finds Evidence Chronic Fatigue Syndrome is Biological”	Janice Wood, Feb2015
May be interesting here because CFS, MCS, and EHS have nearly the same symptoms.	
“The effect of melatonin on the liver of rats exposed to microwave radiation”	Djordjevic e.a. Feb2015
“Outdoor characterization of radio frequency electromagnetic fields in a Spanish birth cohort”	

Calvente, I. e.a. 21Feb2015
“Inter-individual and intra-individual variation of the effects of pulsed RF EMF exposure on the human sleep EEG” C. Lustenberger e.a. 17Feb2015
“Does Short-term Exposure to Cell Phone Radiation Affect the Blood?” The Weston A. Price Foundation 03Feb2015
“Effect of Short-term 900 MHz low level electromagnetic radiation exposure on blood serotonin and glutamate levels” Eris AH e.a., Feb2015 608 mW/m ² seem to be a high strength of the applied radiation, but a cell phone produces about 100 000 mW/m ² at a distance of 0.5 – 1.0 cm to the sensitive head region of the user.
“Characterization of Extremely Low Frequency Magnetic Fields from Diesel, Gasoline and Hybrid Cars under Controlled Conditions” Hareuveny R. e.a. 30Jan2015
“Reduced growth of soybean seedlings after exposure to weak microwave radiation from GSM 900 mobile phone and base station” Halgamuge MN 21Jan2015
“Australia launches multi-million dollar investigation into the health effects of mobile phones” phonescausebraincancer.com 7Jan2015

Single Studies 2014

“The Influence of Electromagnetic Radiation Generated by a Mobile Phone on the Skeletal System of Rats” see also	Sieroń-Stoltny, K., e.a. 04Nov2014
“Electromagnetic Fields Promote Severe and Unique Vascular Calcification in an Animal Model of Ectopic Calcification”	Shuvy M. e.a. Sep2014
“Electromagnetic Radiofrequency Radiation Emitted from GSM Mobile Phones Decreases the Accuracy of Home Blood Glucose Monitors”	Mortazavi S. e.a. 01Sept2014
“Influence of electric, magnetic, and electromagnetic fields on the circadian system: Current stage of knowledge”	Lewszuk B. e.a. 22Jul2014
“Mobile phone use and brain tumours in the CERENAT case-control study” (<i>details see above</i>)	The British Medical Journal: G. Coureau e.a. 9May2014
“Electromagnetic Radiation Health Effects in Exposed and Non-Exposed Residents in Penang”	Adlina Suleiman e.a. Apr2014
“Estudio confirma alteraciones, al vivir cerca de las antenas base de telefonía”	comentario JCL

Single Studies earlier than 2014

„Cell Phones Could Increase Cancer Risk“ Fanden erhöhten oxidativen Stress im Speichel von 20 Handy-Vielnutzern, verglichen mit dem von Gehörlosen und Handy-Verweigerern. #Oxidativer Stress gilt als einer der Hauptrisikofaktoren für die Entstehung von Krebserkrankungen.	Hamzany Y e.a., Tel Aviv 29Jul2013
„Experiment – After This You Will Think Twice Before Putting your Cell Phone Near your Head“	Maverick T 8Jun2013
„Cell phone usage and erectile function“	Centr. Europ. J. Urology: Al-Ali, BM e.a. 26Apr2013
“Mobile Phone Use and Risk of Brain Neoplasms and other Cancers: Prospective Study”	Benson VS e.a. 28Mar2013
“Studies Show Microwaves Drastically Reduce Nutrients In Food”	Ed Bauman 22Aug2012
“Electromagnetic hypersensitivity: evidence for a novel neurological syndrome”	McCarty e.a., Dec 2011
“Location of Gliomas in Relation to Mobile Telephone Use: A Case-Case and Case-Specular Analysis”	Suvi Larjavaara e.a. 02Feb2011
“Cancer Mortality near Air Force Bases”	Lester JR & Moore DF 26Jul2010
“Dirty electricity elevates blood sugar among electrically sensitive diabetics and may explain brittle	

diabetes”	Magda Havas ...Jun2008
“Mobile phone radiation might alter protein expression in human skin”	A. Karinen 11Feb2008
“EHS: Observations in the Human Skin of a Physical Impairment”	Olle Johansson Feb2006

(6) Methodological Problems of Epidemiologic Studies

Powerwatch: “Brain tumours and EMFs” *Contains excellent reviews of the Interphone study, of Hardell’s study, and of some other studies on brain tumours induced by EMR, including common flaws of these and of case-control studies in general.*

“Does electromagnetic hypersensitivity originate from placebo responses? Indications from a qualitative study”	wiley.com 15Sep2015
“Collaborate and listen to reproduce research” »Better communication between labs may resolve many reproducibility problems, according to report.«	Chris Woolston 16Jul2015
“Real versus Simulated Mobile Phone Exposures in Experimental Studies”	Dimitris J. Panagopoulos, Olle Johansson, and George L. Carlo 14Jul2015
“Wi-fi isn't hurting you, but the fear of it might be” (see D. Leszczynski)	abc.net.au 10Jul2015
Maison Saine et Écologique article: “Electrohypersensitivity conference debunks ‘nocebo effect’ theory”	25Jun2015

Dariusz Leszczynski

“Electrohypersensitivity and the 'nocebo effect'”	linkedin.com/pulse 8Sep2015
“Can you be allergic to your Wi-Fi?”	theconversation 06Sept2015
“‘Nocebo effect’ proves: Available EHS research is useless for decisions-making”	14Jul2015
“All the Epidemiology Studies have Unreliable Exposure Data”	24Jun2015
»Epidemiologists waste time & money when they don’t collect real radiation exposure data in cellphone & cancer studies. Information is collected by smartphone sensors continuously and can be extracted with specialized software. Just the attitudes of epidemiologists need to be changed to prevent such disasters as Danish Cohort or Million Women studies. The next disaster is brewing - COSMOS cohort has no exposure data besides minutes, what is worthless!«	
“BioEM2015: Yet another, absolutely unreliable but peer-reviewed study” »There is a serious problem with all to date published epidemiology and human studies because nearly all of them present cell phone radiation exposure as minutes/day of cell phone use« D. Leszczynski	16Jun2015
“Leszczynski resigns from the Advisory Board of Cellraid”	01Jul2015

“Industry-funded Scientists Undermine Cell Phone Radiation Science”

12Feb2015

“Wireless Communication and Health: Future of the Research and the Precautionary Principle” *date?*

„Kontroverse Schlussfolgerungen je nach Finanzier der Mobilfunkforschung“ Frentzel-Beyme Jun2013

“Radiation Research” and The Cult of Negative Results” The results of scientific investigations into the effects of non-ionizing EMR are highly dependent on whether the study is sponsored by industry or not. Microwave News 31Jul2006

„DNA bricht je nach Sponsor: Mobilfunk-Forschung ad absurdum“ *Zwei Autorentams USA/Schweiz lasen 85/59 Studien, die Wirkungen von EMF auf das Erbgut untersuchten und fanden in den Industrie-finanzierten Studien nur 1/10 so oft signifikante, gesundheitsschädigende Effekte. (more about this topic see above)* Diagnose Funk 29 Oct 2006

“Observational Studies: Cohort and Case-Control Studies”

Song JW & Chung KC Dec2010

Very good Explanation ! Advantages and Disadvantages illustrated.

- (7) *Models of the impact of EMR on the (human) organism* – The working principle of ... –
– Mechanism of Damaging Effects of Electro-Magnetic Fields on living organisms –

Yakymenko e.a., Lai, Levitt: Compilations of 100 and 153 articles on Oxidative Stress

“Metabolic imbalance caused by radiation from wireless devices linked to many health risks”

News Medical 25Jul2015

“Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation”

93 of 100 currently available peer-reviewed studies show that low-frequency RFR induces oxidative stress in biological systems.

Yakymenko e.a. 07Jul2015

(see commentaries by Levitt and by Lai below) (see abstract and excerpts below)

Compilation of 153 studies on oxidative Stress

137 of 153 currently available peer-reviewed studies show that low-frequency RFR induces oxidative stress in biological systems.

Henry Lai 08Jul2015

“Low Intensity Radiofrequency Radiation: A New Oxidant for Living Cells”

(more see below)

Yakymenko I, e.a., Kiev 29Mar2014

“Low Intensity Radiofrequency Radiation: A New Oxidant for Living Cells” »... it is clear that the substantial overproduction of ROS [reactive oxygen species] in living cells under low intensity RFR exposure could cause a broad spectrum of health disorders and diseases, including cancer in humans. Undoubtedly, this calls for the further intensive research in the area, as well as to a precautionary approach in routine usage of wireless devices.« Yakymenko I, e.a., Kiev 29Mar2014

(German summary) (German summary)

“Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays” (also here) Levitt BB & Lai H Dec2010

“Estudio Internacional relaciona claramente las radiaciones de los dispositivos móviles y el cáncer” Joan Carles López 27Jul2015

“La radiación de dispositivos inalámbricos causaría cáncer, según un estudio” tendencias 27Jul2015

Wikipedia on Oxidative Stress: »In humans, oxidative stress is thought to be involved in the development of Asperger syndrome, ADHD, cancer, Parkinson’s disease, Lafora disease, Alzheimer’s disease, atherosclerosis, heart failure, myocardial infarction, fragile X syndrome, Sickle Cell Disease, lichen planus, vitiligo, autism, infection, and chronic fatigue syndrome.«

A Collection of Studies by **Blank, Martin, Ph.D.**, e.a. on EMR effects on biological systems through interaction with electrons moving during REDOX reactions and also within DNA 1998 to 2014

still: (7) Models of the impact of EMR on the (human) organism

“Övertygande bevisat: Trådlös teknik orsakar oxidativ stress”	stralskyddsstiftelsen 28Jul2015
“EMF Effects Seen in Blood”	Oscillatorium 25Jul2015
“Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: Microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action”	Pall ML 02Jun2015
“Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects” (more by M.L.Pall)	Martin L Pall 26Jun2013
“Select Amino Acids for Electrosensitivity (ES), Electrohypersensitivity (EHS), and Multiple Chemical Sensitivity (MCS)”	EMF Refugee Paul Doyon 01Jun2015
„Schädigungen des Menschen durch Hochfrequenzsender sind seit Jahrzehnten ,Stand des Wissens“ Contains a lot of literature on the mechanisms of EHS (see also) h.e.s.e.-projekt Warnke U	05May2015
“Physics and Biology”	www.vincentlauer.fr 2015
“The doctrine of innocuity of electromagnetic waves vs Transitions stimulated by the electromagnetic waves”	www.vincentlauer.fr 20Sept2014
“Physics of antigen recognition and of its interaction with electromagnetic waves” //	17Nov2014
“Interaction of the cycle of T lymphocytes with electromagnetic fields” //	24Feb2015
“EMF and DNA, Fractal Antenna” contains a lot of Links !!	oscillatorium.com 16Sep2014
“Could myelin damage from radiofrequency electromagnetic field exposure help explain the functional impairment electrohypersensitivity? A review of the evidence”	Redmayne M, Johansson O. 09Sep2014
“Electromagnetic Radiofrequency Radiation Emitted from GSM Mobile Phones Decreases the Accuracy	

of Home Blood Glucose Monitors”	Mortazavi S. e.a. 01Sept2014
“A cross-sectional case control study on genetic damage in individuals residing in the vicinity of a mobile phone base station.”	Gandhi G. 9Jul2014
“Comparison of the Genotoxic Effects Induced by 50 Hz Extremely Low-Frequency Electromagnetic Fields and 1800 MHz Radiofrequency Electromagnetic Fields in GC-2 Cells”	Weixia D.e.a. Jul2014

still: (7) Models of the impact of EMR on the (human) organism

“Limbic Kindling: Hard Wiring The Brain For Hypersensitivity And Chronic Fatigue Syndrome” Could Limbic kindling also explain electro-hypersensitivity?	Cortjohnson, Health Rising 17May2014
“La contaminación electromagnética de baja frecuencia, produce rotura del ADN según un estudio”	Radiaciones: Joan Carles López 24Jan2014
“Extremely low-frequency electromagnetic fields cause DNA strand breaks in normal cells” see also	Mihai CT e.a. 8Jan2014
„Increasing incidence of burnout due to magnetic and electromagnetic fields of cell phone networks and other wireless communication technologies	Ulrich Warnke and Peter Hensing 27Jun2013
“The Effects of Cell Phone Waves (900 MHz-GSM Band) on Sperm Parameters and Total Antioxidant Capacity in Rats”	Ghanbari M. e.a. Apr2013
“Exposure to 1800 MHz radiofrequency electromagnetic radiation induces oxidative DNA base damage in a mouse spermatocyte-derived cell line”	Liu C. e.a. 27Mar2013
“Effects of prenatal and postnatal exposure to GSM-like radiofrequency on blood chemistry and oxidative stress in infant rabbits, an experimental study”	Ozgun E. e.a. 24Mar2013
„Leitlinie der ÖÄK zur Abklärung und Therapie EMF-bezogener Beschwerden und Krankheiten (EMF-Syndrom)“ (details see below)	modifiziert und ergänzt durch den AEB Jan2013
„NADPH Oxidase and Neurodegeneration“	Hernandes MS & Britto LRG Dec2012
“Electromagnetic fields instantaneously modulate nitric oxide signaling in challenged biological systems” (see also)	Pilla, Arthur, 28Sep2012
“In Vivo and In Vitro Toxicology of Mobile Phone Radiation”	Devra Davis 23Nov2012
“Cell Phone Exposure, Toxicology and Epidemiology - An Update”	Devra Davis 08Aug2012
“Einfluss schwacher Magnetfelder auf biologische Systeme: Biophysikalische und biochemische Wirkungsmechanismen“	H.-Peter Neitzke Aug2012
„Schädigung des Organismus durch Mobil- und Kommunikationsfunk“	U.Warnke 05Jul2012

“An initial mechanism for damage effects through magnetic fields under simultaneously occurring high frequency exposure from mobile telecommunications” = english abstract of:
 „Ein initialer Mechanismus zu Schädigungseffekten durch Magnetfelder bei gleichzeitig einwirkender Hochfrequenz des Mobil- und Kommunikationsfunks“ U. Warnke Mar2009

still: (7) Models of the impact of EMR on the (human) organism

“A Thermodynamic Perspective on the Interaction of Radio Frequency Radiation with Living Tissue”
 Michael Peleg, Israel Apr2012

“Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields”
 (Rimbach Study) Gustavs K 04Sep2011

“DNA is a fractal antenna in electromagnetic fields“ Blank M & Goodman R Apr2011

“A mechanism for stimulation of biosynthesis by electromagnetic fields: charge transfer in DNA and base pair separation” Blank M & Goodman R Jan2008

“Pathophysiology of cell phone radiation: oxidative stress and carcinogenesis with focus on male reproductive system” Desai, NR 12Oct2009

„Pathophysiologie der Mobilfunkstrahlung: Oxidativer Stress und Karzinogenese mit dem Studienschwerpunkt auf dem männlichen Fortpflanzungssystem“ Desai, NR Mar2010

„Vorsorge aufgrund so genannter a-thermischer Wirkungen von HF-EMF“*
Beste Übersicht über DNA-Brüche, u.a. in der Reflex-Studie 2000-2004 = 12 Forschergruppen aus 7 europ. Ländern, und weitere in vitro- und Tierversuche. Mosgoeller, W. Sept2010

“Oxidative stress-induced biological damage by low-level EMFs: mechanism of free radical pair electron spinpolarization and biochemical amplification” (see full text including literature) Georgiou CD 2010

“How Susceptible are Genes to Mobile Phone Radiation?” Richter K. e.a. March 2009

“The Work of Leif Salford” *Lists several important studies by Leif Salford on EMR effects.*
 Cellular Phone Task Force 1997 - 2009

“DNA and Chromosome Damage: A Crucial Non-Thermal Biological Effect of Microwave Radiation An Overview of Studies and Models on the Effect Mechanism” Shiroff VM 2008

„Blood levels alarmingly altered“ Kempton West Study 2007 26Jun2008

“Mechanism of short-term ERK activation by electromagnetic fields at mobile phone frequencies” Friedman J. e.a. 1Aug2007

“Do You Have Microwave Sickness?” 02Feb2007
 Mentions several pathophysiological consequences of EMR. The article is based on:

Do You Have Microwave/EMR Sickness?

by Doyon PR 04Feb2007?

The following articles by M.L. Pall may be of interest here because EHS is one of the chronic multisystem diseases as are MCS, CFS, MF:

The Pall Protocol For Treating CFS/ME“ (Antioxidant Treatments)

Pro Health 26Mar2013

“How Can We Cure NO/ONOO– Cycle Diseases? Approaches to Curing Chronic Fatigue Syndrome/Myalgic Encephalomyelitis, Fibromyalgia, Multiple Chemical Sensitivity, Gulf War Syndrome and Possibly Many Others”

Martin L Pall Mar2010

“Explaining ‘Unexplained Illnesses’: Disease Paradigm for Chronic Fatigue Syndrome, Multiple Chemical Sensitivity, Fibromyalgia, Post-Traumatic Stress Disorder, Gulf War Syndrome, and Others”

Pall ML 01May2007

“Myalgic Encephalomyelitis/Chronic Fatigue Syndrome as a NO/ONOO- Cycle Diseases Pall ML date?”

“Elevated nitric oxide/peroxynitrite theory of multiple chemical sensitivity: central role of N-methyl-D-aspartate receptors in the sensitivity mechanism”

Martin L Pall Sep2003

“Common etiology of posttraumatic stress disorder, fibromyalgia, chronic fatigue syndrome and multiple chemical sensitivity via elevated nitric oxide/peroxynitrite”

Pall ML 1Aug2001

still: (7) Models of the impact of EMR on the (human) organism

“Nitric oxide and peroxynitrite in health and disease”

Pacher P. e.a. Jan2007

“The NOX family of ROS-generating NADPH Oxidases: Physiology and Pathophysiology”

Bedard K, Krause KH. Jan2007

“Identification and grouping of relevant experimental parameters to evaluate the effects of radiofrequency magnetic fields in in vitro studies (GROUPER)”

Simkö M. e.a. 2007

“The Biological Effects of Weak Electromagnetic Fields”

Goldsworthy A 2007

Comité Scientifique sur les Champs ElectroMagnétiques

2003 – 2004

Contains some papers on the working principle of EMR

„Can Public Health Policy Decisions Be Made On The Basis Of Currently Available Data On Electromagnetic Field Interactions With Biological Systems?“

Alan H. Frey, ca.1999

“Electromagnetic Field Interactions with Biological Systems”

Alan H. Frey, 1990

– End of chapter (7) “Models of the impact of EMR on the (human) organism”–

(8) Commentaries and Excerpts**Blake Levitt's Commentary on the paper by Yakymenko e.a., 07 July 2015**

- »As a science writer, I can't think of a single other area where a literature review like this, which found positive effects in 93-out-of-100 studies at low intensity exposures to a known genotoxin, wouldn't trigger a high-level public policy recommendation for avoidance, and/or government regulatory intervention. Ratios like that in science just don't exist. Henry Lai and I found a similar pattern in our 2010 paper published in Environmental Reviews of extremely low intensity exposures common (and now ubiquitous) from infrastructure—out of 60 qualifying papers, 56 were positive for effects. There's little green grass left on this playing field—it's almost all covered with red flags. Yet nothing happens, wireless products just keep coming, people remain enthralled/entranced with convenience, government is clocked out—but at what price?«
- »Oxidative cellular stress is also implicated in premature aging, bone fractures and a host of other illnesses. The body does have compensatory mechanisms and antioxidants can help but in time the whole system wears down from constant exposures like these and cannot rebound.«”

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21Jul2015

“Dr. Henry Lai's Commentary on the paper by Yakymenko e.a., 07 July 2015

- » [I] agree with Blake: ‘There's little green grass left on this playing field—it's almost all covered with red flags.’ But, it is surprising that there are still people claiming that “there's nothing to worry about’.«
- »The paper by Yakymenko et al concluding that ‘93 out of 100 studies showed radiofrequency radiation- exposure increased oxidative stress’ is a very well written paper. A similar conclusion was published in the last update of the BioInitiative Report. The database used by Yakymenko was about 18 months old, when the paper was written. [As of July 8, 2015](#), there had been 153 papers published on the oxidative stress effect of radiofrequency radiation, of which 90% (137 papers) showed effect and 10% (16 papers) reported no effect. Thus, this affirms that the majority of peer-reviewed research indicates a potentially harmful effect of radiofrequency radiation.«

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18Jul2015

Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation

Igor Yakymenko, Olexandr Tsybulin, Evgeniy Sidorik, Diane Henshel, Olga Kyrylenko, and Sergiy Kyrylenko, Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. *Electromagnetic Biology and Medicine*. Posted online on July 7, 2015.
doi:10.3109/15368378.2015.1043557

Abstract

- »This review aims to cover experimental data on oxidative effects of low-intensity radiofrequency radiation (RFR) in living cells.
- Analysis of the currently available peer-reviewed scientific literature reveals molecular effects induced by low-intensity RFR in living cells; this includes significant activation of key pathways generating reactive oxygen species (ROS), activation of peroxidation, oxidative damage of DNA and changes in the activity of antioxidant enzymes. It indicates that among 100 currently available peer-reviewed

studies dealing with oxidative effects of low-intensity RFR, in general, 93 confirmed that RFR induces oxidative effects in biological systems. A wide pathogenic potential of the induced ROS and their involvement in cell signaling pathways explains a range of biological/health effects of low-intensity RFR, which include both cancer and non-cancer pathologies.

In conclusion, our analysis demonstrates that low-intensity RFR is an expressive oxidative agent for living cells with a high pathogenic potential and that the oxidative stress induced by RFR exposure should be recognized as one of the primary mechanisms of the biological activity of this kind of radiation.« <http://bit.ly/1Hgq8fa>

Excerpt

- »... the level of indoor background RFR in industrialized countries increased 5,000-fold from 1985 to 2005«
- »To date, molecular mechanisms of non-thermal effects of RFR are still a bottleneck in the research on the biological/health effects of low-intensity RFR, although recently many studies have been carried out on metabolic changes in living cells under low-intensity RFR, and comprehensive reviews were published (Belyaev, 2010; Consales et al., 2012; Desai et al., 2009; Yakymenko et al., 2011). In the present work, we analyze the results of molecular effects of low-intensity RFR in living cells and model systems, with a special emphasis on oxidative effects and free radical mechanisms. It might seem paradoxical that, despite being non-ionizing, RFR can induce significant activation of free radical processes and overproduction of reactive oxygen species (ROS) in living cells. We believe that the analysis of recent findings will allow recognition of a general picture of the potential health effects of already ubiquitous and ever-increasing RFR.«
- »The main indexes of RFR are (i) frequency (Hz); (ii) intensity or power density (PD) of radiation (W/m^2 or mW/cm^2); (iii) its modulated or non-modulated nature; and (iv) continuous or discontinuous pattern of radiation. For the absorbed RFR energy, a parameter of specific absorption rate (SAR) is used (W/kg).«
- »As to the international safety limits, the ICNIRP recommendations restrict intensity of RFR to 450–1000 $\mu\text{W}/\text{cm}^2$ (depending on the frequency of radiation) and the SAR value to 2 W/kg , as calculated for human heads and torsos (ICNIRP, 1998). These indexes were adopted by ICNIRP based on the **behavioral response** of laboratory rats, which were exposed to gradually increased intensities of RFR to determine the point at which the animals became thermally distressed (Gandhi et al., 2012).«

Section Headings

- > Physical/biophysical effects of low-intensity RFR in living cells
- > Generation of reactive oxygen species under RFR exposure in living cells
- > Oxidative damage of DNA under RFR exposure - To date more than hundred papers have been published on mutagenic effects of RFR and most of them revealed significant effects (Ruediger, 2009).
- > Free radicals induced under the RFR exposure can perturb cellular signaling
- > Oxidative effects and non-cancer health effects of RFR
- > Oxidative effects and potential carcinogenicity of RFR

Conclusions

»The analysis of modern data on biological effects of low-intensity RFR leads to a firm conclusion that this physical agent is a powerful oxidative stressor for living cell. The oxidative efficiency of RFR can be mediated via changes in activities of key ROS-generating systems, including mitochondria and non-phagocytic NADH oxidases, via direct effects on water molecules, and via induction of conformation changes in biologically important macromolecules. In turn, a broad biological potential of ROS and other free radicals, including both their mutagenic effects and their signaling regulatory potential, makes RFR a potentially hazardous factor for human health. We suggest minimizing the intensity and time of RFR exposures, and taking a precautionary approach towards wireless technologies in everyday human life.«

07Jul2015

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21Jul2015

„Leitlinie der ÖÄK zur Abklärung und Therapie EMF-bezogener Beschwerden und Krankheiten (EMF-Syndrom)“ **Excerpt**

modifiziert und ergänzt durch den AEB Jan2013

»Aufgrund der wissenschaftlichen Literatur zur Interaktion von EMF mit biologischen Systemen sind mehrere Wirkmechanismen möglich. Ein plausibler Wirkmechanismen auf intra- und interzellulärer Ebene ist z.B. jener über die Bildung freier Radikale / oxidativer und nitrosativer Stress (Friedmann et al. 2007, Simko 2007, Pall 2007, Bedard und Krause 2007, Pacher et al. 2007, Desai et al. 2009). Im Zentrum steht dabei die vermehrte Bildung von Peroxinitrit (ONOO-) aus der Reaktion von Stickstoffmonoxid (NO) und Superoxid (O₂⁻). Wegen seiner vergleichsweise langen Halbwertszeit schädigt Peroxinitrit eine Vielzahl zentraler Stoffwechselfvorgänge und Zellbestandteile. Mit diesem Ansatz lassen sich viele der im Zusammenhang mit EMF-Expositionen beobachteten Beschwerden, Symptome und deren Verläufe plausibel erklären. Die Hinweise verdichten sich, dass das EMF-Syndrom (EMFS) zu den Multisystemerkrankungen (Pall 2007) wie etwa Chronic Fatigue Syndrome (CFS), Multiple Chemical Sensitivity (MCS), Fibromyalgie (FM), Post Traumatic Stress Disorder (PTSD) zu zählen ist.«

End of the page "Scientific Studies"