EMF and the Potentiation of Pathogens and Heavy Metals: Effective Mitigation and Detox

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London, Nov 2017

Is the current electromagnetic environment responsible for chronic illness, extinction of entire species, global warming and general madness?

- It has been calculated, that 50% of the population today will die with or of degenerative brain disease. M.Alzheimer has been shown to be directly related to the exposure to microwave (O.Johannsen 2006) and also to the presence of Lyme spirochetes (J.Miklossy) and viral infections in the brain and to aluminium/mercury in the CNS (many reports)
- The "health span" has decreased in the last 20 years by 10 years and is exponentially shortening
- In the last few years, 80% of insects and 75% of songbirds have vanished – but only in areas with "good" cellphone coverage (which is now blanketing the western world)
- The number of autistic children increases every 5 years and by 2025 50% of the children born may be diagnosed with a life long neuro-developmental disorder by the time they reach the age of 4 (Stephanie Seneff PhD). Autism has been linked to both gestational exposure to toxins, infectious pathogens and electromagnetic radiation (EMR). This author detected a gestational microwave exposure in autistic children over 20 times higher than in the neurotypical children
- There is a potent synergy between toxins, pathogens and microwave. Is it intentional?

In the US , in women the cause of “death by neurological disease” has increased 663 % in the last 20 years

“Neurological deaths of American adults (55–74) and the over 75's by sex compared with 20 Western countries 1989–2010: Cause for concern” Colin Pritchard, Emily Rosenorn-Lanng
Surg Neurol Int 23-Jul-2015;6:123

Abstract

Background: Have USA total neurological deaths (TNDs) of adults (55-74) and the over 75's risen more than in twenty Western Countries

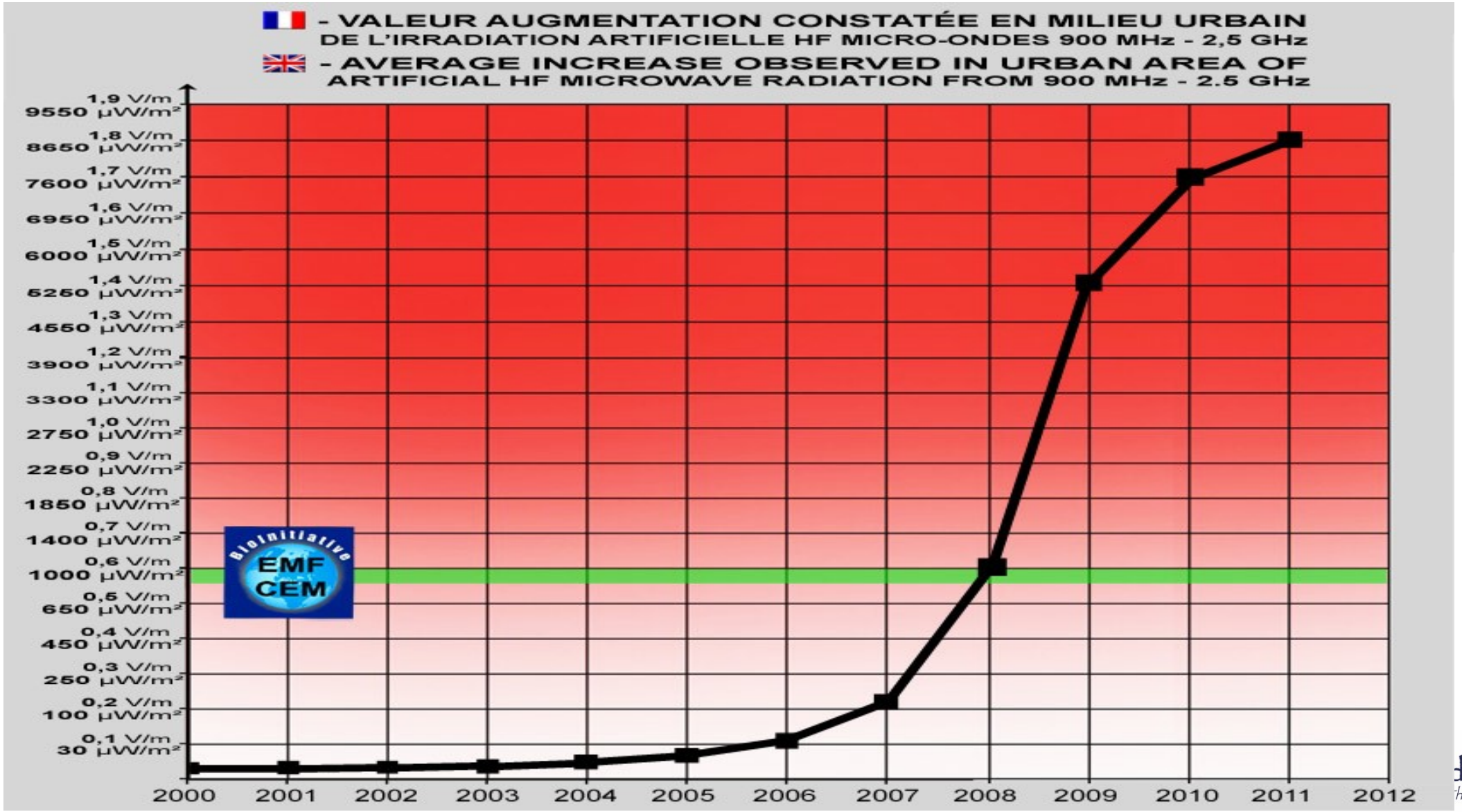
Methods: World Health Organization TND data are compared with control mortalities cancer mortality rates (CMRs) and circulatory disease deaths (CDDs) between **1989-1991** and **2008-2010** and odds ratios (ORs) and confidence intervals calculated.

Results: Neurological Deaths -- Twenty country (TC) average 55-74 male rates per million (pm) rose 2% to 503 pm, USA increased by 82% to 627 pm. TC average females rose 1% to 390 pm, USA rising 48% to 560 pm. TC average over 75's male and **female** increased 117% and 143%; USA rising 368% and **663%,** significantly more than 16 countries. Cancer mortality -- Average 55-74 male and female fell 20% and 12%, USA down 36% and 18%. TC average over 75's male and female fell 13% and 15%, the USA 29% and 2%. Circulatory deaths -- TC average 55-74 rates fell 60% and 46% the USA down 54% and 53%. Over 75's average down 46% and 39%, USA falling 40% and 33%. ORs for rose substantially in every country. TC average 75's ORs for CMR: TND male and females were 1:2.83 and 1:3.04 but the USA 1:5.18 and 1:6.50. The ORs for CDD: TND male and females TC average was 1:3.42 and 1:3.62 but the USA 1:6.13 and 1:9.89.

Conclusions: Every country's neurological deaths rose relative to the controls, especially in the USA, which is a cause for concern and suggests possible environmental influences.

Keywords: Age, gender, international comparison, neurological deaths

Growth in Exposure to Microwave Radiation 2000-2010



“Alzheimer mortality - why does it increase so fast in sparsely populated areas?”

European Biology and Bioelectromagnetics. 2005; 1: 225-246. Hallberg Ö, Johansson O.

Department of Neuroscience, Karolinska Institute,

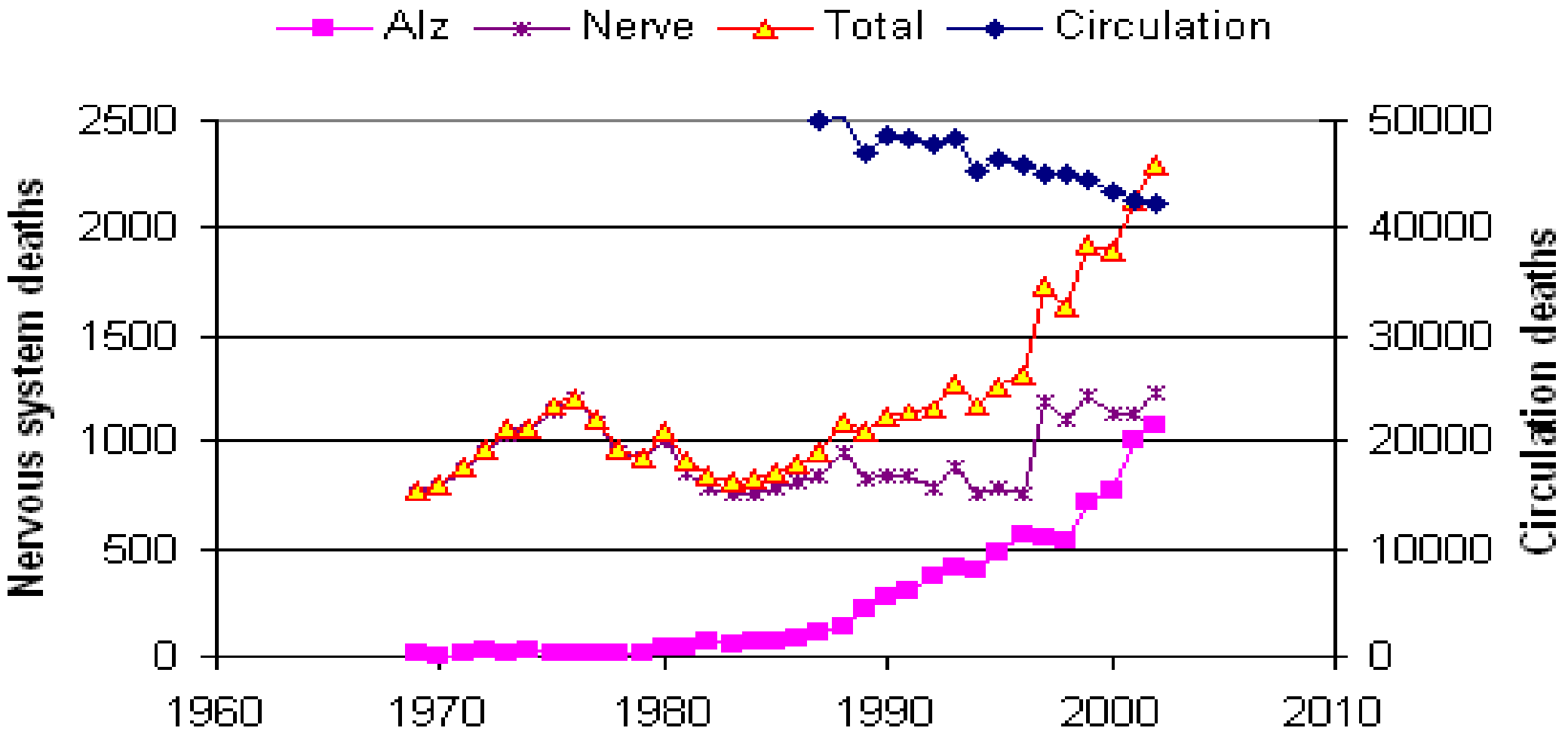
Abstract

Purpose: To investigate the mortality in nervous system-related diseases in different parts of Sweden to see if it may have any correlation to mobile phone output power. **Methods**: The average output power from mobile phones was calculated based on power measurements and information on mobile system coverage over the country. Mortality data was obtained from the National Board of Health and Welfare in Sweden. **Results**: The main contribution to the increased mortality in nervous system-related diseases was deaths due to increasing mortality in Alzheimer's disease (AD). The correlation between mobile phone average output power and mortality has increased the last few years and is today significant.

Conclusions: **The mortality in Alzheimer's disease appears to be associated with mobile phone output power. The mortality is increasing fast and is expected to increase substantially within the next 10 years.** Deeper studies in this complex area are necessary.

From the Text: A closer analysis of different diseases within the group "nervous system diseases" revealed that **AD was the main contributor to the strong increase of deaths** during the years since the late 1980's.

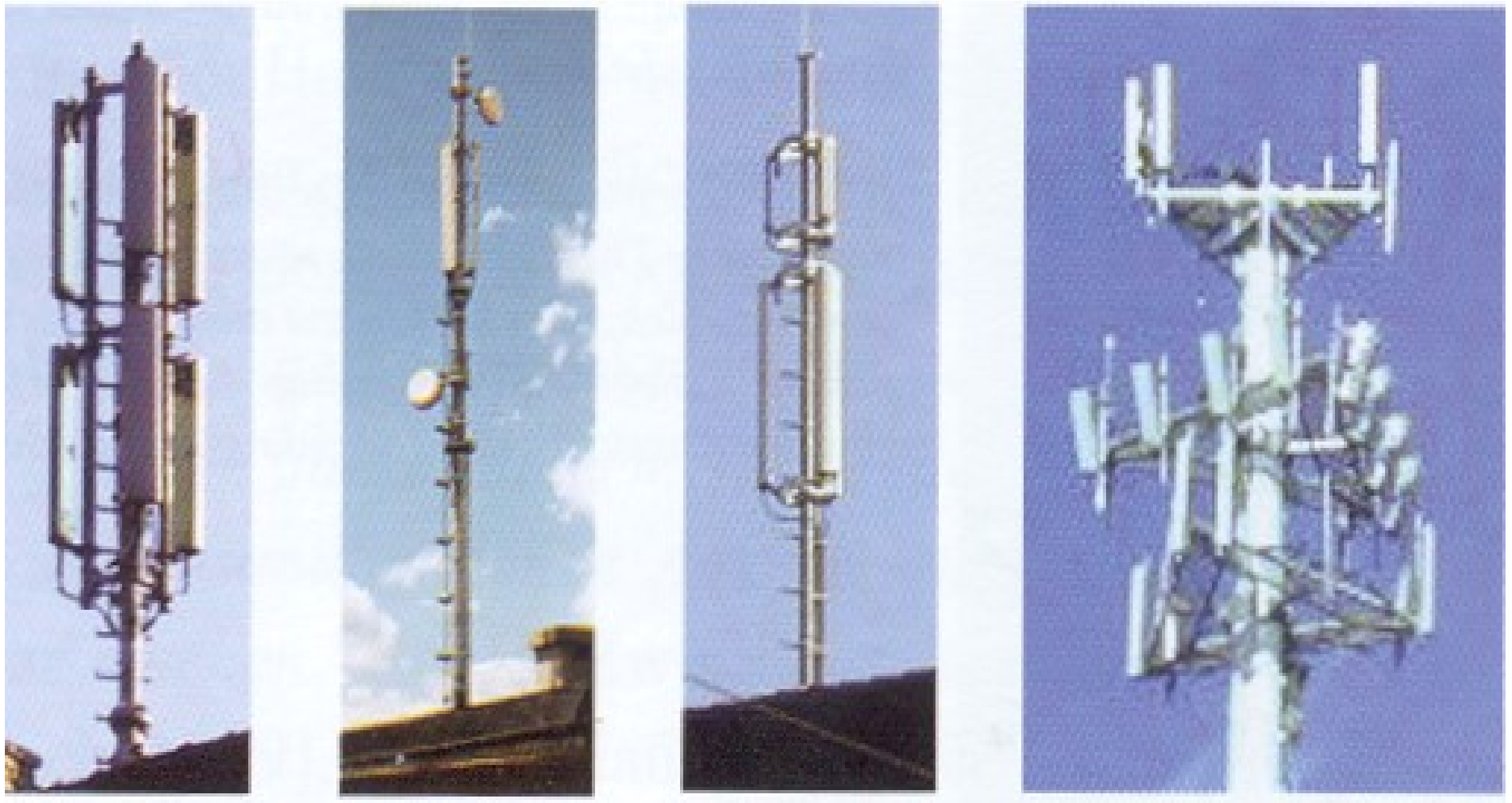
The perfect storm: microwave + Lyme + Aluminium = Alzheimer's



Household electric appliances, ground current, electric powerlines, chordless phones, police and ambulance communication system (400MHz) have all been linked to health problems. Are they all bad?
Correct Answer: It depends on your distance from the source, on the frequency and waveform used - and what is piggybacked on this frequency (induction/dirty electricity)

- Belpomme, D., Irigaray, P., & Hardell, L. (2008). Electromagnetic fields as cancer-causing agents. *Environmental Research*, *107*(2), 289-290.
- Nindl, Gabi, Walter X. Balcavage, David N. Vesper, John A. Swez, Brittany J. Wetzel, Jack K. Chamberlain, and Mary T. Fox. "Experiments showing that electromagnetic fields can be used to treat inflammatory diseases." *Biomedical Sciences Instrumentation* 36 (2000): 7-13.
- Johnson, M. T., Waite, L. R., & Nindl, G. (2004). Noninvasive treatment of inflammation using electromagnetic fields: current and emerging therapeutic potential. *Biomedical Sciences Instrumentation*, *40*, 469-474.

Part 1: Sources of Microwave Radiation



Sources of Electrosmog

Cell phone and WiFi use since the 1980s 2.4 GigaHerz (2450 MegaHerz), chordle 1800 MegaHerz

Cell Phone Antennas

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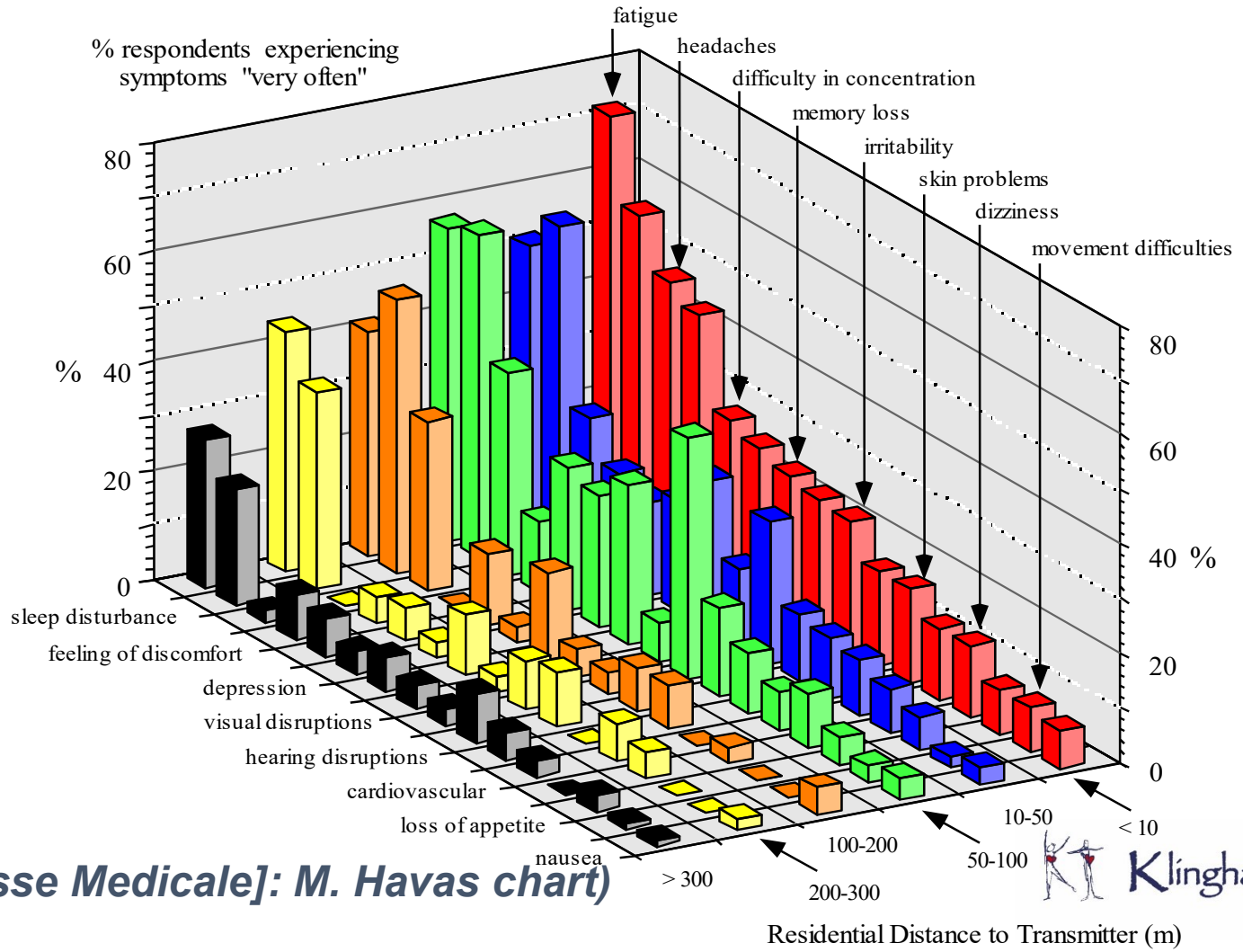
2001 Spain

Frequency of Electromagnetic Hypersensitivity Symptoms Based on Distance to Cell Phone Base Station

Electro-Hyper-Sensitivity (EHS)

1. Fatigue *
2. Sleep disturbance *
3. Headaches
4. Feeling of discomfort
5. Difficulty concentrating *
6. Depression *
7. Memory loss *
8. Visual disruptions *
9. Irritability *
10. Hearing disruptions *
11. Skin problems *
12. Cardiovascular *
13. Dizziness *
14. Loss of appetite *
15. Movement difficulties *
16. Nausea

* Associated with Aging: "Rapid Aging Syndrome"



[Santini 2001, La Presse Medicale]: M. Havas chart)

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Basic Science

“Brain proteome response following whole body exposure of mice to mobile phone or wireless DECT base radiation”

Electromagnetic Biology and Medicine; Posted online on January 20, 2012.
(doi:10.3109/15368378.2011.631068 (1–25) Adamantia F. Fragopoulou, Athina Samara, Marianna H. Antonelou, Anta Xanthopoulou, Aggeliki Papadopoulou, Konstantinos Vougas, Eugenia Koutsogiannopoulou, Ema Anastasiadou, Dimitrios J. Stravopodis, George Th. Tsangaris, Lukas H. Margaritis Department of Cell Biology and Biophysics, Athens University

Abstract:

The objective of this study was to investigate the effects of two sources of electromagnetic fields (EMFs) on the proteome of cerebellum, hippocampus, and frontal lobe in Balb/c mice following long-term whole body irradiation. Three equally divided groups of animals (6 animals/group) were used; the **first** group was exposed to a **typical mobile phone**, at a SAR level range of 0.17–0.37 W/kg for 3 h daily for 8 months, the **second** group was exposed to a **wireless DECT base** (Digital Enhanced Cordless Telecommunications/Telephone) at a SAR level range of 0.012–0.028 W/kg for 8 h/day also for 8 months and the t**hird** group comprised the **sham**-exposed animals. Comparative proteomics analysis revealed that long-term irradiation from **both EMF sources** altered significantly ($p < 0.05$) the **expression of 143 proteins** in total (as low as 0.003 fold downregulation **up to 114 fold overexpression**). Several neural function related proteins (i.e., Glial Fibrillary Acidic Protein (GFAP), Alpha synuclein, Glia Maturation Factor beta (GMF), and apolipoprotein E (apoE)), heat shock proteins, and cytoskeletal proteins (i.e., Neurofilaments and tropomodulin) are included in this list as well as proteins of the brain metabolism (i.e., Aspartate aminotransferase, Glutamate dehydrogenase) to nearly all brain regions studied. Western blot analysis on selected proteins confirmed the proteomics data. The observed **protein expression changes may be related** to **brain plasticity** alterations, indicative of **oxidative stress in the nervous system** or involved in **apoptosis** and might potentially explain human health hazards reported so far, such as **headaches, sleep disturbance, fatigue, memory deficits, and brain tumor long-term induction** under similar exposure conditions.

NeuroToxicology
Volume 51, December 2015, Pages 158–165

Low intensity microwave radiation induced oxidative stress, inflammatory response and DNA damage in rat brain

Kanu Megha et al

Abstract

Over the past decade people have been constantly exposed to microwave radiation mainly from wireless communication devices used in day to day life. Therefore, the concerns over potential adverse effects of microwave radiation on human health are increasing. Until now no study has been proposed to investigate the underlying causes of genotoxic effects induced by low intensity microwave exposure. Thus, the present study was undertaken to determine the influence of low intensity microwave radiation on oxidative stress, inflammatory response and DNA damage in rat brain. The study was carried out on 24 male Fischer 344 rats, randomly divided into four groups (n = 6 in each group): group I consisted of sham exposed (control) rats, group II–IV consisted of rats exposed to microwave radiation at frequencies 900, 1800 and 2450 MHz, specific absorption rates (SARs) 0.59, 0.58 and 0.66 mW/kg, respectively in gigahertz transverse electromagnetic (GTEM) cell for 60 days (2 h/day, 5 days/week). Rats were sacrificed and decapitated to isolate hippocampus at the end of the exposure duration.

Low intensity microwave exposure resulted in a frequency dependent significant increase in oxidative stress markers *viz*. malondialdehyde (MDA), protein carbonyl (PCO) and catalase (CAT) in microwave exposed groups in comparison to sham exposed group ($p < 0.05$). Whereas, levels of reduced glutathione (GSH) and superoxide dismutase (SOD) were found significantly decreased in microwave exposed groups ($p < 0.05$). A significant increase in levels of pro-inflammatory cytokines (IL-2, IL-6, TNF-α, and IFN-γ) was observed in microwave exposed animal ($p < 0.05$). Furthermore, significant DNA damage was also observed in microwave exposed groups as compared to their corresponding values in sham exposed group ($p < 0.05$).

In conclusion, the present study suggests that **low intensity microwave radiation induces oxidative stress, inflammatory response and DNA damage in brain** by exerting a frequency dependent effect. The study also indicates that increased oxidative stress and inflammatory response might be the factors involved in DNA damage following low intensity microwave exposure.

23 Studies show that EMR affects the voltage gated calcium channels and causes release of peroxinitrite

Pall, M. L. (2013). Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. *Journal of cellular and molecular medicine*, *17*(8), 958-965.

From the abstract:

The direct targets of extremely low and microwave frequency range electromagnetic fields (EMFs) in producing non-thermal effects have not been clearly established. Pathophysiological responses to EMFs may be as a result of nitric oxide-peroxynitrite-oxidative stress pathway of action. A single such well-documented example, EMF induction of DNA single-strand breaks in cells, as measured by alkaline comet assays, is reviewed here. This article reviews, then, a substantially supported set of targets, VGCCs, whose stimulation produces non-thermal EMF responses by humans/higher animals with downstream effects involving Ca^{2+}/calmodulin-dependent nitric oxide increases, which may explain therapeutic and pathophysiological effects.

Both extremely low frequency fields, including 50/60 cycle exposures, and microwave EMF range exposures act *via* activation of VGCCs. So do static electric fields, static magnetic fields and nanosecond pulses. Voltage-gated calcium channel stimulation leads to increased intracellular Ca^{2+}, which can act in turn to stimulate the two calcium/calmodulin-dependent nitric oxide synthases and increase nitric oxide. It is suggested here that nitric oxide may act in therapeutic/potentially therapeutic EMF responses *via* its main physiological pathway, stimulating cGMP and protein kinase G. It is also suggested that **nitric oxide may act in pathophysiological responses to EMF exposure, by acting as a precursor of peroxynitrite, producing both oxidative stress and free radical breakdown products.**

Sage, C., Johansson, O., & Sage, S. A. (2007). Personal digital assistant (PDA) cell phone units produce elevated extremely-low frequency electromagnetic field emissions. *Bioelectromagnetics*, *28*(5), 386-392.

Peroxinitrite has been implied as causative in ALS, Parkinson, Alzheimer, MS and many other neurological conditions

Hooper, D. C., Bagasra, O., Marini, J. C., Zborek, A., Ohnishi, S. T., Kean, R., ... & Akaike, T. (1997). Prevention of experimental **allergic encephalomyelitis** by targeting nitric oxide and peroxynitrite: implications for the treatment of **multiple sclerosis**. *Proceedings of the National Academy of Sciences*, *94*(6), 2528-2533.

Beckman, Joseph S., et al. **"ALS**, SOD and peroxynitrite." *Nature* 364.6438 (1993): 584-584.

Ebadi, Manuchair, and Sushil K. Sharma. "Peroxynitrite and mitochondrial dysfunction in the pathogenesis of **Parkinson's disease**." *Antioxidants and Redox Signaling* 5.3 (2003): 319-335.

Pall, Martin L. "Elevated peroxynitrite as the cause of **chronic fatigue syndrome**: Other inducers and mechanisms of symptom generation." *Journal of Chronic Fatigue Syndrome*7.4 (2000): 45-58.

Smith, Mark A., et al. "Widespread peroxynitrite-mediated damage in **Alzheimer's disease**." *Journal of Neuroscience*17.8 (1997): 2653-2657.

Szabó, Csaba. "The pathophysiological role of peroxynitrite in shock, **inflammation**, and ischemia-reperfusion injury." *Shock*, 6 (2); 1996: 79-88.

SzabÓ, C. (1996). **DNA strand breakage** and activation of poly-ADP ribosyltransferase: a cytotoxic pathway triggered by peroxynitrite. *Free Radical Biology and Medicine*, *21*(6), 855-869.

Extremely-Low Frequency (ELF) and Radiofrequency (RF) Electromagnetic Fields Have Very Similar Biological Effects

- **Genetic Effects**
- **Cancer**
- **Cellular/Molecular Effects**
- **Electrophysiology**
- **Behavior**
- **Nervous System**
- **Blood-brain barrier**
- **Calcium**
- **Cardiovascular**
- **Warm sensation**
- **Hormones**
- **Immunology**
- **Metabolic rate/effects**
- **Reproduction/growth**
- **Subjective symptoms**
- **Stress**

Source: Dr. Henry Lai, Research Professor, Department of Bioengineering, University of Washington. Presentation March 21, 2008 at Council on Wireless Technology Impacts EMF Panel, San Francisco, CA.

Part 1: **WiFi** and other sources of Electromagnetic Radiation and **Chronic Infections**

It was known 1973, that 2.4 GigaHerz is the wavelength that destroys our ability to fight off infections. This wavelength was later selected to blanket the entire western world. Why? Who?

- Szmigielski, S., J. Jeljaszewicz, and Marzenna Wiranowska. "Acute staphylococcal infections in rabbits irradiated with 3-GHz microwaves." *Annals of the New York Academy of Sciences* 247, no. 1 (1975): 305-311. From the abstract: "Increased cell-membrane permeability and injury to subcellular granules and depression of phagocytic function with inhibition of intracellular killing of bacteria"
- Mayers, C. P., & Habeshaw, J. A. (1973). Depression of phagocytosis: A non-thermal effect of microwave radiation as a potential hazard to health. *International Journal of Radiation Biology and Related Studies in Physics, Chemistry and Medicine*, *24*(5), 449-461.
- Johansson, O. (2009). Disturbance of the immune system by electromagnetic fields—A potentially underlying cause for cellular damage and tissue repair reduction which could lead to disease and impairment. *Pathophysiology*, *16*(2), 157-1
- Panagopoulos, D. J., Johansson, O., & Carlo, G. L. (2015). Real versus simulated mobile phone exposures in experimental studies. *BioMed research international*, *2015*. From the abstract: "Living organisms seem to have decreased defense against environmental stressors "
- Shandala, M.G., Dumanskiĭ, U.D., Rudnev, M.I., Ershova, L.K. and Los, I.P., 1979. Study of nonionizing microwave radiation effects upon the central nervous system and behavior reactions. *Environmental Health Perspectives*, *30*, p.115. From the abstract: The biologic effect of an electromagnetic field of a frequency of 2375 (2.4 GHz) was studied. … causes a number of changes in bioelectric brain activity and also in behavioral immunological, and cytochemical reactions. … inhibition of cellular and humoral immunity were also observed.

Aterini, Stefano, and Marco Ruggiero. **"Electromagnetic Fields."** ***Encyclopedia of Cancer*****.** Springer Berlin Heidelberg, 2011. 1213-1216.

- "However, since we have learned that electromagnetic fields**, even of minimal intensity such as the endogenous electromagnetic fields,** modify the human microbiome, their effects might be much more complex and far ranging
- Considering that the human microbiome is involved in the development and function of all other organs and systems, and most notably the **immune system** (Palm *et al*. 2015), **alteration of the microbiome may be one of the mechanisms through which electromagnetic fields, both endogenous and exogenous, exert their biological effects.**
- Thus, the effects of electromagnetic fields on the human microbiome open a new perspective in assessing the risks for health and in preventing them.
- Microbes and the microbiome may amplify or mitigate carcinogenesis, responsiveness to cancer therapeutics, and cancer-associated complication (Garrett 2015) and, therefore, **electromagnetic fields modifying the microbiome may interfere with all such cancer-related responses**.
- It is foreseeable that the development of functional foods containing probiotics for the prevention and treatment of cancer will have to take into account the **effects of** endogenous as well as exogenous **electromagnetic fields on the human microbiome"**.

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If we have a chronic endotoxin-producing infection such as Lyme, or exposure to mould in our home, or chronic EBV – WiFi and the use of the cellphone massively potentiates the virulence of the problem and opens the blood-brain barrier (so our CNS turns to mush)

Riddle, Marie M., Ralph J. Smialowicz, and Ronald R. Rogers. **"Microwave radiation (2450-MHz) potentiates the lethal effect of endotoxin** in mice." Health physics 42.3 (1982): 335-340.

Abstract: Groups of male CBA/J mice were injected with Salmonella typhimurium lipopolysaccharide (LPS) and irradiated with 2450 MHz (CW) microwaves. The 50% lethal dose (LD50) of LPS was determined for mice irradiated at 30, 20, 10 and 5 mW/cm2 immediately following injection. The average specific absorption rate was approximately 0.6 W/kg per 1 mW/cm2 incident power. An equal number of animals served as sham-irradiated controls for each power density. The mice were placed individually in small containers and were maintained at 22 degrees C and 50% relative humidity during a 2 hour irradiation period. Following irradiation the mice were returned to their home cages and were observed for 48 hr. A significant decrease in the LPS dose required to kill 50% of the mice was observed at power densities of 20 and 30 mW/cm2. High ambient temperature (37 degrees C) also potentiated the lethal effect of endotoxin. Microwave irradiation prior to LPS injection, however, did not affect the lethal action of LPS.

Nittby, H., G. Grafstrom, J. L. Eberhardt, L. Malmgren, A. Brun, B. R. Persson, and L. G. Salford. 2008. Radiofrequency and extremely low-frequency electromagnetic field effects on the **blood-brain barrier.** Electromagn Biol Med 27 (2):103-26: From the abstract: **"There is evidence that exposure to electromagnetic fields at non-thermal levels disrupts this barrier"**

Electromagnetic fields suppress immunity and provoke the growth and pathogenicity of Borrelia and EBV

Marsch, W., A. Mayet, and M. Wolter. "Cutaneous fibroses induced by Borrelia burgdorferi." *British Journal of Dermatology* 128.6 (1993): 674-678.

Summary: Three cases of chronic infection with Borrelia burgdorferi are described. The patients presented with nodular or discoid fibrosis, partly in conjunction with acrodermatitis chronica atrophicans (ACA). Juxta-articular fihrotic nodules may develop within a few months of the onset of ACA. Nodular, discoid morphoea-like, and widespread cutaneous fibroses in chronic Borrelia infection may be provoked by trauma, surgery or electromagnetic radiation. They respond well to antibiotic therapy. These lesions offer an in vivo model for studying the evolution of immunologically induced fibrosis.

Doyon, P. R., & Johansson, O. (2017). Electromagnetic fields may act via calcineurin inhibition to suppress immunity, thereby increasing risk for opportunistic infection: Conceivable mechanisms of action. *Medical Hypotheses*, *106*, 71-87.

Liu, Y., Wang, M. L., Zhong, R. G., Ma, X. M., Wang, Q., & Zeng, Y. (2013). The induction of Epstein-Barr Virus early antigen expression in Raji cells by GSM mobile phone radiation. *Biomed Environ Sci*, *26*(1), 76-8.

Abstract conclusions: "The results indicate that mobile phone radiation could induce the expression of EBV-EA and the induction is even more evident with the presence of tumor promoter such as TPA"

A 7-minute phonecall can lastingly activate your hidden EBV

The Induction of Epstein-Barr Virus Early Antigen Expression in Raji Cells by GSM Mobile Phone Radiation*

LIU Yang[1], WANG Ming Lian[1,#], ZHONG Ru Gang[1], MA Xue Mei[1], WANG Qun[2], and ZENG Yi[1]

Biomed Environ Sci, 2013; 26(1):76-78

Mobile phones are widely used nowadays and there have been many reports suspecting mobile phone radiation-induced cancer during the past few years[1-5].

Raji Cell line carries the latent Epstein-Barr Virus (EBV) genome and expresses the Epstein-Barr virus nuclear antigen (EBNA). Raji is sometimes referred to as an EBV "non-producer" since the integrated EBV genome carries deletions attributed to preventing the formation of virus particles. A variety of antigens, such as the Epstein-Barr virus early antigen (EBV-EA), can be expressed when Raji cells are stimulated by chemical or physical carcinogens[10]. Clinical studies have shown that EBV-EA is linked to malignancies including Burkitt's lymphoma, T-cell lymphoma, gastric cancer, nasopharyngeal cancer and some breast cancer[11]. EBV-EA gene has been identified as a cancer-related gene[12], so we observe the effect of mobile phone radiation on the expression of EBV-EA gene to investigate the relationship between mobile phone radiation and cancer genesis.

The results indicate that mobile phone radiation could induce the expression of EBV-EA and the induction is even more evident with the presence of tumor promoter such as TPA.

Nat Rev Neurol 2014 Nov;10(11):643-60. doi: 10.1038/nrneurol.2014.187. Epub 2014 Oct 14.

Maternal immune activation and abnormal brain development across CNS disorders.

Knuese I, Chicha L, Britschgi M, Schobel SA, Bodmer M, Hellings JA, Toovey S, Prinssen EP

Abstract

Epidemiological studies have shown a clear association between maternal infection and schizophrenia or autism in the progeny. Animal models have revealed maternal immune activation (mIA) to be a profound risk factor for neurochemical and behavioural abnormalities in the offspring. Microglial priming has been proposed as a major consequence of mIA, and represents a critical link in a causal chain that leads to the wide spectrum of neuronal dysfunctions and behavioural phenotypes observed in the juvenile, adult or aged offspring. Such diversity of phenotypic outcomes in the mIA model are mirrored by recent clinical evidence suggesting that infectious exposure during pregnancy is also associated with epilepsy and, to a lesser extent, cerebral palsy in children. Preclinical research also suggests that mIA might precipitate the development of Alzheimer and Parkinson diseases. Here, we summarize and critically review the emerging evidence that mIA is a shared environmental risk factor across CNS disorders that varies as a function of interactions between genetic and additional environmental factors. We also review ongoing clinical trials targeting immune pathways affected by mIA that may play a part in disease manifestation. In addition, future directions and outstanding questions are discussed, including potential symptomatic, disease-modifying and preventive treatment strategies.

J Neuroinflammation. 2011 Aug 4;8(1):90

Alzheimer's disease - a neurospirochetosis.
Analysis of the evidence following Koch's and Hill's criteria.

Miklossy J.

Abstract: It is established that chronic spirochetal infection can cause slowly progressive dementia, brain atrophy and amyloid deposition in late neurosyphilis. Recently it has been suggested that various types of spirochetes, in an analogous way to Treponema pallidum, could cause dementia and may be involved in the pathogenesis of Alzheimer's disease (AD). Here, we review all data available in the literature on the detection of spirochetes in AD and critically analyze the association and causal relationship between spirochetes and AD following established criteria of Koch and Hill. The results show a statistically significant association between spirochetes and AD (P = 1.5 x 10-17, OR = 20, 95% CI = 8-60, N = 247). When neutral techniques recognizing all types of spirochetes were used, or the highly prevalent periodontal pathogen Treponemas were analyzed, spirochetes were observed in the brain in more than 90% of AD cases. Borrelia burgdorferi was detected in the brain in 25.3% of AD cases analyzed and was 13 times more frequent in AD compared to controls. Periodontal pathogen Treponemas (T. pectinovorum, T. amylovorum, T. lecithinolyticum, T. maltophilum, T. medium, T.socranskii) and Borrelia burgdorferi were detected using species specific PCR and antibodies. Importantly, co-infection with several spirochetes occurs in AD. The pathological and biological hallmarks of AD were reproduced in vitro. The analysis of reviewed data following Koch's and Hill's postulates shows a probable causal relationship between **neurospirochetosis** and AD. Persisting inflammation and amyloid deposition initiated and sustained by chronic spirochetal infection form together with the various hypotheses suggested to play a role in the pathogenesis of AD a comprehensive entity. As suggested by Hill, once the probability of a causal relationship is established prompt action is needed. Support and attention should be given to this field of AD research**. Spirochetal infection occurs years or decades before the manifestation of dementia. As adequate antibiotic and anti-inflammatory therapies are available, as in syphilis, one might prevent and eradicate dementia.**

Part 3: EMR and Toxic Metals

Wireless Radiation in the Etiology and Treatment of Autism: Clinical Observations and Mechanisms

J. Aust. Coll. Nutr. & Env. Med. Vol. 26 No.2 (August 2007) pages 3-7

Tamara J Mariea and George L Carlo

- **Results**

The sentinel subject's history suggested that the **efficiency of heavy metal detoxification was dramatically increased when EMR was eliminated**. For the larger groups, data indicated that heavy metals were cleared in a time and molecular weight-dependent manner after EMR was eliminated from the treatment environment.

- **Conclusions**

The findings suggest a significant **role of EMR in both the etiology of Autism and the efficacy of therapeutic interventions.** The mechanism of EMR impact could be direct by facilitating early clinical onset of symptoms or indirect, including **trapping heavy metals in cells** and both accelerating the onset of symptoms caused by heavy metal toxicity as well as impeding therapeutic clearance. These data also suggest that wireless device EMR is a synergen in the etiology of Autism, acting in conjunction with environmental and genetic factors, and offer a mechanistic explanation for the correlation between concurrent increases in the incidence of Autism and the use of wireless technology.

Electromagnetic Radiation and the ability to detoxify metals and environmental toxicants

Yurekli, Ali Ihsan, et al. "GSM base station electromagnetic radiation and oxidative stress in rats." *Electromagnetic Biology and Medicine* 25.3 (2006): 177-188.

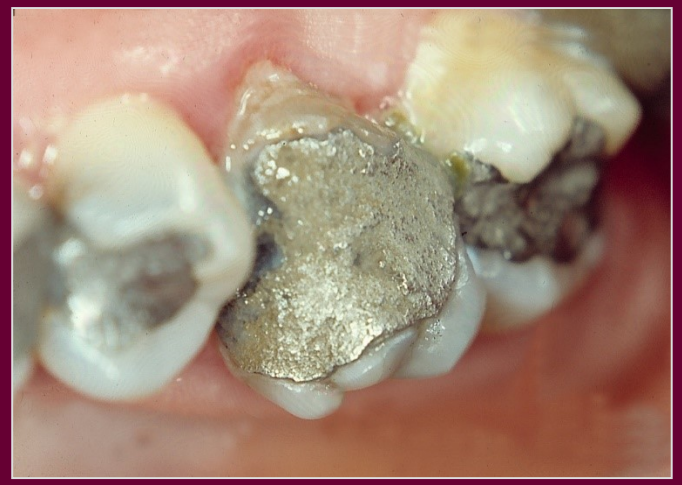
Abstract: The ever increasing use of cellular phones and the increasing number of associated base stations are becoming a widespread source of nonionizing electromagnetic radiation. Some biological effects are likely to occur even at low-level EM fields. In this study, a gigahertz transverse electromagnetic (GTEM) cell was used as an exposure environment for plane wave conditions of far-field free space EM field propagation at the GSM base transceiver station (BTS) frequency of 945 MHz, and effects on oxidative stress in rats were investigated. When EM fields at a power density of 3.67 W/m^2 (specific absorption rate = 11.3 mW/kg), which is well below current exposure limits, were applied, MDA (malondialdehyde) level was found to increase and GSH **(reduced glutathione)** concentration was found to **decrease significantly** ($p < 0.0001$). Additionally, there was a less significant ($p = 0.0190$) increase in SOD (superoxide dismutase) activity under EM exposure.

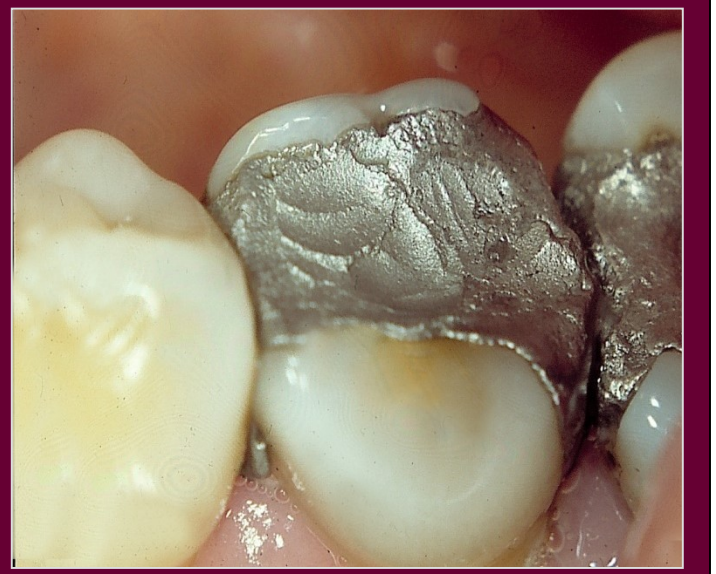
Burlaka, Anatoly, et al. "**Changes in mitochondrial functioning with electromagnetic radiation** of ultra high frequency as revealed by electron paramagnetic resonance methods." *International journal of radiation biology* 90.5 (2014): 357-362.

RESULTS: The qualitative and quantitative disturbances in electron transport chain (ETC) of mitochondria are registered. A formation of the iron-nitrosyl complexes of nitric oxide (NO) radicals with the iron-sulphide (FeS) proteins, the decreased activity of FeS-protein N2 of NADH-ubiquinone oxidoreductase complex and flavo-ubisemiquinone growth combined with the increased rates of superoxide production are obtained.

Mercury toxicity causing „CFIDS“, insomnia and memory problems

This is what mom had in her mouth when shewas pregnant. child was diagnosed with ASD at age 2





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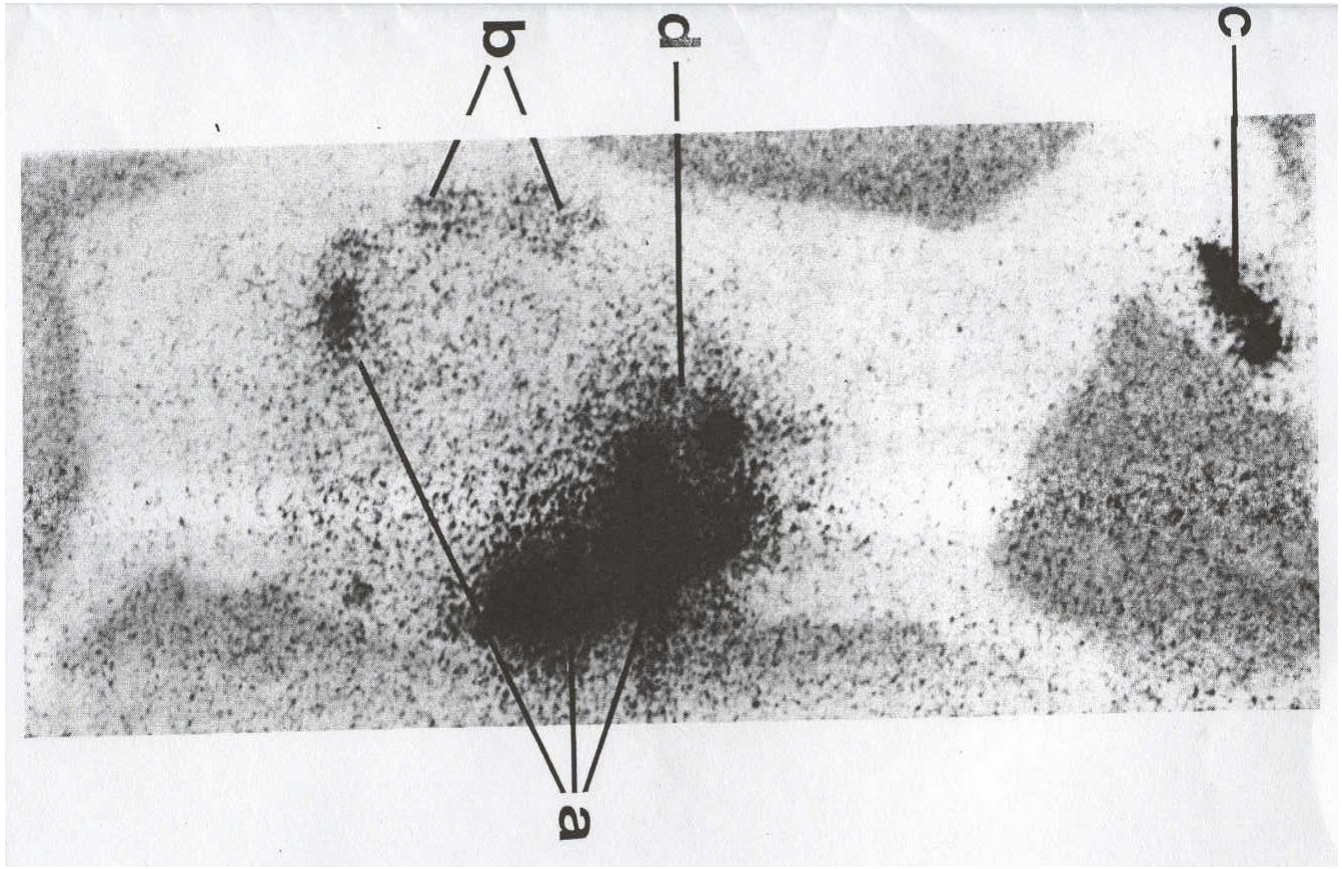
Mercury compartmentalizes in a sheep after placement of several amalgam fillings (Vimy,Lorscheider et al)



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The constant 24/7 exposure to microwave/cellphone radiation from either WiFi, nearby cellphone tower (less than 2 km) or chordless phone in the home drives the release of toxic mercury vapour from dental amalgam fillings. 80% migrate into the CNS with a half-life of 32 years

J Biomed Phys Eng. 2016 Mar; 6(1): 41–46.

„Increased Release of Mercury from Dental Amalgam Fillings due to Maternal Exposure to Electromagnetic Fields as a Possible Mechanism for the High Rates of Autism in the Offspring: Introducing a Hypothesis“

Gh. Mortazavi; M. Haghani; N. Rastegarian; S. Zarei; and S.M.J. Mortazavi

Aluminum potentizes Lyme!

Occurrence of Severe Destructive Lyme Arthritis in Hamsters Vaccinated with Outer Surface Protein A and Challenged with *Borrelia burgdorferi*

Infect. Immun. February 2000 vol. 68 no. 2 658-663 Cindy L. Croke1,2, Erik L. Munson1,2, Steven D. Lovrich3,John A. Christopherson1,2, Monica C. Remington1,2,Douglas M England4,5, Steven M. Callister3,6 and Ronald F. Schell1,2,7,*

ABSTRACT

Arthritis is a frequent and major complication of infection with *Borrelia burgdorferi* sensu stricto. The antigens responsible for the induction of arthritis are unknown. Here we provide direct evidence that a major surface protein, outer surface protein A (OspA), can induce arthritis. Hamsters were vaccinated with 30, 60, or 120 μg of recombinant OspA (rOspA) in aluminum hydroxide and challenged with *B. burgdorferi* sensu stricto isolate 297 or C-1-11. Swelling of the hind paws was detected in 100, 100, and 50% of hamsters vaccinated with 30, 60, or 120 μg of rOspA, respectively. In addition, arthritis developed in 57% of hamsters vaccinated with a canine rOspA vaccine after infection with *B. burgdorferi*sensu stricto. **When the canine rOspA vaccine was combined with aluminum hydroxide, all vaccinated hamsters developed arthritis** after challenge with *B. burgdorferi* sensu stricto. Histopathologic examination confirmed the development of severe destructive arthritis in rOspA-vaccinated hamsters challenged with *B. burgdorferi*sensu stricto. These findings suggest that rOspA vaccines should be modified to eliminate epitopes of OspA responsible for the induction of arthritis. Our results are important because an rOspA vaccine in aluminum hydroxide was approved by the Food and Drug Administration for use in humans

PK Vaccination schedule and parental exposure

Mother: Amalgams: exposure to inorganic mercury in utero and through breast feeding - potentially increase metal mobilisation by oral antibiotics

Father: Autoimmune genetic susceptibility

• PK age	Vaccine	Adjuvant		Contaminants/ culture
2 months	DTP/Polio/Hib	Aluminium Hydroxide	0.5mg	VERO
	Hep B	Aluminium Hydroxide	0.5 mg	Saccharomyces cerevisiae
3 months	repeat	Aluminium Hydroxide	1.0 mg	
4 months	repeat	Aluminium Hydroxide	1.0 mg	
9 months	Men C	Aluminium Hydroxide	0.5 mg	
12 months	MMR	-		Lactose, eggs

Beobachtungsort: Deutschland

Quelle: flikr.com,
Pandoozy Photos,
South Downs, Woodingdean

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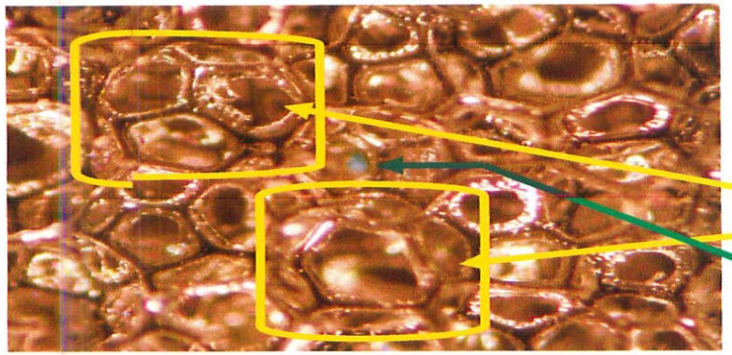
Militäroperationen: Militarisierung des Himmels

Mitochondrial Dysfunction from Inhaled Aluminum Nanoparticles

Fluorescence-probe study of fatty acids in mitochondrial and plasma membranes

Please note that only abnormalities are illustrated

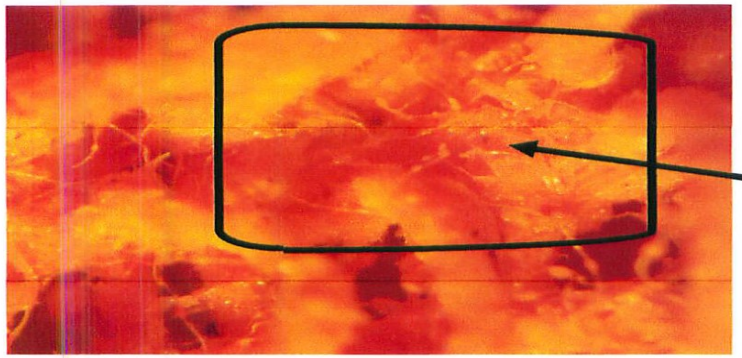


Layered polarization/fluorescence image
Outer surface of plasma membrane

Oxidative damage – white areas

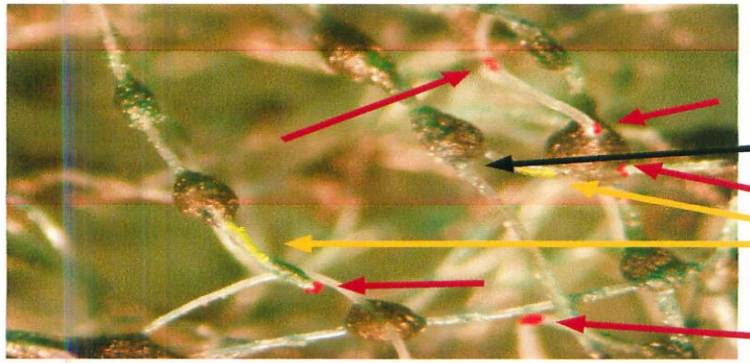
Large fatty acid structures
mostly at approx 0.4um spacing

Aluminium – green probe



Very high magnification fluorescence
Arachidonic acid/other fatty acids

Lower edge of one of the **large fatty acid structures**: weak interaction with normal 18- and 20-carbon PUFAs



The cytoskeleton (layered fluorescence)
actin fibrils & mitochondria

Rather unusual linking between some actin fibrils & mitochondria

Aluminium on some actin fibrils (Al = yellow probe)

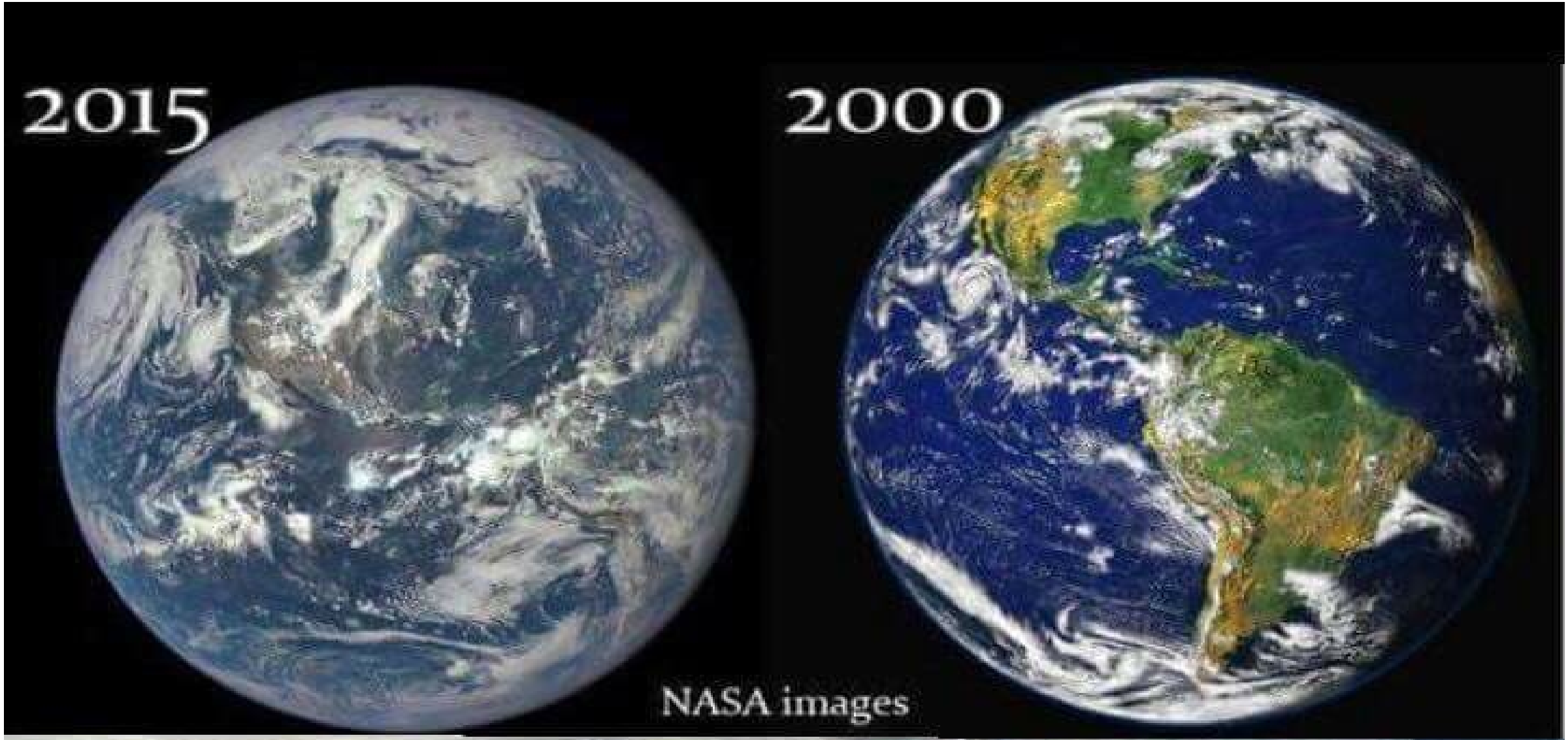
Ca-actin binding (Ca = red probe)

Int. J. Environ. Res. Public Health 2015, 12, 9375-9390

J. Marvin Herndon, *Received: 29 June 2015 / Accepted: 5 August 2015 / Published: 11 August 2015*

Abstract: The widespread, intentional and increasingly frequent chemical emplacement in the troposphere has gone unidentified and unremarked in the scientific literature for years. The author presents evidence that toxic coal combustion fly ash is the most likely **aerosolized particulate sprayed by tanker-jets for geoengineering, weather-modification and climate-modification purposes** and describes some of the multifold consequences on public health. Two methods are employed: (1) Comparison of 8 elements analyzed in rainwater, leached from aerosolized particulates, with corresponding elements leached into water from coal fly ash in published laboratory experiments, and (2) Comparison of 14 elements analyzed in dust collected outdoors on a high-efficiency particulate air (HEPA) filter with corresponding elements analyzed in un-leached coal fly ash material. The results show: (1) the assemblage of elements in rainwater and in the corresponding experimental leachate are essentially identical. At a 99% confidence interval, they have identical means (T-test) and identical variances (F-test); and (2) the assemblage of elements in the HEPA dust and in the corresponding average un-leached coal fly ash are likewise essentially identical.

The consequences on public health are profound, including exposure to a variety of toxic heavy metals, radioactive elements, and neurologically-implicated chemically mobile aluminum released by body moisture *in situ* after inhalation or through transdermal induction.


2015
2000
NASA images

A comparison of temporal trends in United States autism prevalence to trends in suspected environmental factors.

Nevison CD Environ Health. 2014 Sep 5;13:73. doi: 10.1186/1476-069X-13-73

Abstract

BACKGROUND:

The prevalence of diagnosed autism has increased rapidly over the last several decades among U.S. children. Environmental factors are thought to be driving this increase and a list of the top ten suspected environmental toxins was published recently.

METHODS:

Temporal trends in autism for birth years 1970-2005 were derived from a combination of data from the California Department of Developmental Services (CDDS) and the United States Individuals with Disabilities Education Act (IDEA). Temporal trends in suspected toxins were derived from data compiled during an extensive literature survey. Toxin and autism trends were compared by visual inspection and computed correlation coefficients. Using IDEA data, autism prevalence vs. birth year trends were calculated independently from snapshots of data from the most recent annual report, and by tracking prevalence at a constant age over many years of reports. The ratio of the snapshot: tracking trend slopes was used to estimate the "real" fraction of the increase in autism.

RESULTS:

The CDDS and IDEA data sets are qualitatively consistent in suggesting a strong increase in autism prevalence over recent decades. The quantitative comparison of IDEA snapshot and constant-age tracking trend slopes suggests that ~75-80% of the tracked increase in autism since 1988 is due to an actual increase in the disorder rather than to changing diagnostic criteria. Most of the suspected environmental toxins examined have flat or decreasing temporal trends that correlate poorly to the rise in autism. Some, including lead, organochlorine pesticides and vehicular emissions, have strongly decreasing trends. ***Among the suspected toxins surveyed, polybrominated diphenyl ethers, aluminum adjuvants, and the herbicide glyphosate have increasing trends that correlate positively to the rise in autism.***

CONCLUSIONS:

Diagnosed autism prevalence has risen dramatically in the U.S over the last several decades and continued to trend upward as of birth year 2005. The increase is mainly real and has occurred mostly since the late 1980s. In contrast, children's exposure to most of the top ten toxic compounds has remained flat or decreased over this same time frame. Environmental factors with increasing temporal trends can help suggest hypotheses for drivers of autism that merit further investigation.

Autism may be Linked to Electromagnetic Radiation Levels In Mother's Bedroom During Pregnancy

Pilot Study Finds Over 20x Higher Microwave Power Density Levels in Mothers' Sleeping Locations During Pregnancy

Dr. Dietrich Klinghardt, MD, PhD of the Sophia Health Institute in Woodinville, WA recently conducted a pilot study to assess the potential role of electromagnetic frequencies in the dramatic rise in autism and other neurological impairments over the past decade. Various measurements of electromagnetic radiation exposure were assessed in the case of 10 children with neurological impairment, 8 categorized with Autism Spectrum Disorder. Data was obtained for:

1) Mothers' Body Voltage in the mothers' sleeping location during pregnancy;

2) Child's Body Voltage in current sleeping location;

3) Microwave Power Density in mothers' sleeping location during pregnancy (microwatt/square meter); and

4) Child's Microwave Exposure in current sleeping location.

- Data for mothers with neurologically impaired children were contrasted with similar data for 5 healthy children and their mothers.

The results were as follows:

Body Voltage Levels:

Median Body Voltage Level in Mom's Bed During Pregnancy*

	Value	Range
Neurologically Impaired Children	1,872 milliVolts	(380-6,040)
Healthy Group	224 milliVolts	(12-480)

8.4x Higher body voltage levels in moms with neurologically impaired children

**Note research shoes whatever the Body Voltage of the Mom, it is even higher in the fetus.*

Body Voltage of child in current bed location

	Value	Range
Neurologically Impaired Children	1,028 milliVolts	(420-4,900)
Healthy Group	120 milliVolts	(0-230)

Conclusion: 8.5x Higher Body Voltage in Neurologically Impaired Child's Sleeping Location

Microwave Exposure:

Microwave Power Density in Sleeping Location

Neurologically Impaired Children-Mom's Bed	**mw/sq. meter**	**Range**
Exposure In Pregnancy	290	(110-1,710)
Healthy Group	14	(0-67)

Conclusion: 20.7x higher microwave power density in moms sleeping location in cases where children were neurologically impaired

This pilot data strongly suggests that electromagnetic radiation in the sleeping environment of mothers during pregnancy, as well as electromagnetic radiation in the sleeping environment of children, may be the undiscovered key contributing - if not causative - factor in neurological impairments in children, including autism. Given increasing levels of ambient electromagnetic radiation in modern environments from society's use of electronic equipment, wireless technologies, such as cell phones and wireless networks, high frequency transients on electric lines, and broadband over power lines (BPL), this association needs immediate further exploration

A Possible Association Between Fetal/Neonatal Exposure to Radiofrequency Electromagnetic Radiation and the Increased Incidence of Autism Spectrum Disorders (ASD). Medical Hypotheses, Eden Press, New York. USA (2004); R.C. Kane
http://linkinghub.elsevier.com.proxy.healwa.org/retrieve/pii/S0306987703003098?showall=true

Abstract

Recently disclosed epidemiological data indicate a dramatic increase in the incidence of autism spectrum disorders. Previously, the incidence of autism has been reported as 4-5 per 10000 children. The most recent evidence indicates an increased incidence of about 1 per 500 children. However, the etiology of autism is yet to be determined. The recently disclosed data suggest a possible correlation between autism incidence and a previously unconsidered environmental toxin. It is generally accepted in the scientific community that radiofrequency (RF) radiation is a biologically active substance. It is also readily acknowledged that human exposures to RF radiation have become pervasive during the past 20 years, whereas such exposures were uncommon prior to that time.

It is suggested that **fetal or neo-natal exposures to RF radiation may be associated with an increased incidence of autism**

"Out of Time: A Possible Link Between Mirror Neurons, Autism and Electromagnetic Radiation"
Medical Hypotheses; I.M. Thornton, Eden Press, New York. USA (2006)
http://linkinghub.elsevier.com.proxy.heal-wa.org/retrieve/pii/S0306987706000934?showall=true

Abstract

Recent evidence suggests a link between autism and the human mirror neuron system. In this paper, I argue that **temporal disruption from the environment** may **play an important role in the observed mirror neuron dysfunction**, leading in turn to the pattern of deficits associated with autism. I suggest that the developing nervous system of an infant may be particularly prone to temporal noise that can interfere with the initial calibration of brain networks such as the mirror neuron system. **The most likely source of temporal noise in the environment is artificially generated electromagnetic radiation**. To date, there has been little evidence that electromagnetic radiation poses a direct biological hazard. It is clear, however, that time-varying electromagnetic waves have the potential to temporally modulate the nervous system, particularly when populations of neurons are required to act together. This modulation may be completely harmless for the fully developed nervous system of an adult. For an infant, this same temporal disruption might act to severely delay or disrupt vital calibration processes.

Medical Hypotheses; Volume 70, Issue 5, 2008, Pages 967–974

The association between tick-borne infections, Lyme borreliosis and autism spectrum disorders

Robert C. Bransfield , Jeffrey S. Wulfman, William T. Harvey, Anju I. Usman[d]

Summary

Chronic infectious diseases, including tick-borne infections such as *Borrelia burgdorferi* may have direct effects, promote other infections and create a weakened, sensitized and immunologically vulnerable state during fetal development and infancy leading to increased vulnerability for developing autism spectrum disorders. A dysfunctional synergism with other predisposing and contributing factors may contribute to autism spectrum disorders by provoking innate and adaptive immune reactions to cause and perpetuate effects in susceptible individuals that result in inflammation, molecular mimicry, kynurenine pathway changes, increased quinolinic acid and decreased serotonin, oxidative stress, mitochondrial dysfunction and excitotoxicity that impair the development of the amygdala and other neural structures and neural networks resulting in a partial Klüver–Bucy Syndrome and other deficits **resulting in autism spectrum disorders** and/or exacerbating autism spectrum disorders from other causes throughout life.

Support for this hypothesis includes multiple cases of mothers with Lyme disease and children with autism spectrum disorders; fetal neurological abnormalities associated with tick-borne diseases; similarities between tick-borne diseases and autism spectrum disorder regarding symptoms, pathophysiology, immune reactivity, temporal lobe pathology, and brain imaging data; positive reactivity in several studies with autistic spectrum disorder patients for*Borrelia burgdorferi* (22%, 26% and 20–30%) and 58% for mycoplasma; similar geographic distribution and improvement in autistic symptoms from antibiotic treatment. It is imperative to research these and all possible causes of autism spectrum disorders in order to prevent every preventable case and treat every treatable case until this disease has been eliminated from humanity.

With ultrasound-aided mobilization of microbes (RK protocol) we found either Borrelia, Bartonella, Babesia or a combination of these in 20 of 20 ASD children

American Journal of Immunology/March 2017

Clinical Procedures

"The Ruggiero-Klinghardt (RK) Protocol for the Diagnosis and Treatment of Chronic Conditions with Particular Focus on Lyme Disease"

Dietrich Klinghardt and Marco Ruggiero

Abstract: Here we describe the Ruggiero-Klinghardt (RK) Protocol that is based on integration of Autonomic Response Testing (ART) with diagnostic ultrasonography and on application of therapeutic ultrasounds;the latter are used as a provocation tool and as an instrument to optimize drug uptake and utilization in specific areas of the body. This protocol consists of a precise sequence of diagnostic and therapeutic procedures with the ultimate goal of improving sensitivity and specificity of diagnosis at the same time evaluating and optimizing efficacy of treatments in chronic conditions including, but not limited to, persistent Lyme disease. The RK Protocol represents a paradigm shift in diagnostics and therapeutics: Thus, compartmentalized microbes, transformed cells, toxins and metabolites could be detected using a safe and non-invasive method. In addition, the RK Protocol allows optimization of efficacy of drugs and other therapeutic interventions. Although the RK Protocol was initially developed for persistent Lyme disease, it shows significant potential in conditions ranging from cancer to neurodegenerative diseases and autism. In oncology, the RK Protocol may serve to facilitate early diagnosis and to increase sensitivity of cancer cells to the killing effects of a variety of remedies ranging from conventional radio- and chemotherapy to more recent forms of immunotherapy. Thus, the 1st goal of the RK Protocol is diagnostic: That is,to make pathogens, toxins, transformed cells and cells infected by viruses that are inaccessible to conventional diagnostic and therapeutic tools,visible" to the therapist who can detect them with laboratory methods and deal with them with appropriate interventions; and also to make them visible to the immune system that can fight them in a physiological manner.The 2nd goalis to optimize drug uptake and utilization in the organs and tissues studied and targeted with these procedures.

- **Keywords:** Lyme, Ultrasound, Autonomic Response Testing, Immune System, Imaging, Brain

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Part 4: Treatment

A. **Prevention**: minimize exposure

- “smart” use of the dangerous cellphone and computer: the computer switched on WiFi and the phone on your ear is a cellphone tower right in your face. The WiFi router is a cellphone tower, so is the chordless phone
- Switch off all fuses at night
- Use radio-protective clothing and sleep sanctuary
- Detoxify metals (aluminium, mercury and lead)

B. **Internal Protection** with the informed use of selected items. And forget items you hang around your neck: you cannot counteract physics with metaphysics

Treatment of electrosmog in a "sick" sleeping location: the Faraday canopy

Propolis extract from healthy and happy bees (KiScience "Propolis plus")
Propolis contains caffeic acid (CAPE), a melatonin analogue and booster

- Ozguner, Fehmi, et al. "Mobile phone-induced myocardial oxidative stress: protection by a novel antioxidant agent caffeic acid phenethyl ester." *Toxicology and Industrial Health*21.7-8 (2005): 223-230.
- Takagi, Yasuyuki, et al. "Immune activation and radioprotection by propolis." *The American journal of Chinese medicine* 33.02 (2005): 231-240.El-Ghazaly, M. A., and M. T. Khayyal. "The use of aqueous propolis extract against radiation-induced damage." *Drugs under experimental and clinical research* 21.6 (1995): 229-236.
- Bolouri, Abbas Javadzadeh, et al. "Preventing and therapeutic effect of propolis in radiotherapy induced mucositis of head and neck cancers: a triple-blind, randomized, placebo-controlled trial." *Iranian journal of cancer prevention* 8.5 (2015).
- SPIGOTI, G., et al. "Protective effect of propolis on radiation-induced chromosomal damage on Chinese hamster ovary cells." *Internatonal Nuclear Atlantic Conference*. 2009.
- Montoro, A., et al. "Concentration-dependent protection by ethanol extract of propolis against γ-ray-induced chromosome damage in human blood lymphocytes." *Evidence-based complementary and alternative medicine* 2011 (2010).
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- Oršolić, Nada, et al. "Assessment by survival analysis of the radioprotective properties of propolis and its polyphenolic compounds." *Biological and Pharmaceutical Bulletin* 30.5 (2007): 946-951.

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Biodynamic Rosemary Extract

(www. KiScience.com)

- Ghoneim, Fatma M., and Eetmad A. Arafat. "Histological and histochemical study of the protective role of rosemary extract against harmful effect of cell phone electromagnetic radiation on the parotid glands." *Acta histochemica* 118.5 (2016): 478-485.
- Jindal, A., Soyal, D., Sancheti, G., & Goyal, P. K. (2006). Radioprotective potential of Rosemarinus officinalis against lethal effects of gamma radiation: a preliminary study. *Journal of environmental pathology, toxicology and oncology*, *25*(4).
- Soyal, Dhanraj, et al. "Modulation of radiation-induced biochemical alterations in mice by rosemary (Rosemarinus officinalis) extract." *Phytomedicine* 14.10 (2007): 701-705.
- *Recommended dosage of "RayWave", a product containing both biodynamically grown rosemary, propolis from bees (collecting it from a pristine environment) and cilantro for reduction of toxic metals:*

  2-3 dropperful 3 times/day – for life. Best in either 15-30 ml olive oil or spirit

Melatonin in Autism

Melke, Jonas, et al. "Abnormal melatonin synthesis in autism spectrum disorders." *Molecular Psychiatry* 13.1 (2008): 90-98

Abstract: Melatonin is produced in the dark by the pineal gland and is a key regulator of circadian and seasonal rhythms. A low melatonin level was reported in individuals with autism spectrum disorders (ASD), but the underlying cause of this deficit was unknown. The *ASMT* gene, encoding the last enzyme of melatonin synthesis, is located on the pseudo-autosomal region 1 of the sex chromosomes, deleted in several individuals with ASD. In this study, we sequenced all *ASMT* exons and promoters in individuals with ASD (n=250) and compared the allelic frequencies with controls (n=255). Non-conservative variations of *ASMT* were identified, including a splicing mutation present in two families with ASD, but not in controls. Two polymorphisms located in the promoter (rs4446909 and rs5989681) were more frequent in ASD compared to controls (P=0.0006) and were associated with a dramatic decrease in *ASMT* transcripts in blood cell lines ($P=2\times10^{-10}$). Biochemical analyses performed on blood platelets and/or cultured cells revealed a highly significant decrease in ASMT activity ($P=2\times10^{-12}$) and melatonin level ($P=3\times10^{-11}$) in individuals with ASD. These results indicate that a low melatonin level, caused by a primary deficit in ASMT activity, is a risk factor for ASD. They also support *ASMT* as a susceptibility gene for ASD and highlight the crucial role of melatonin in human cognition and behavior.

Rossignol, D. A., and R. E. Frye. 2011. Melatonin in autism spectrum disorders: a systematic review and meta-analysis. Dev Med Child Neurol 53 (9):783-92

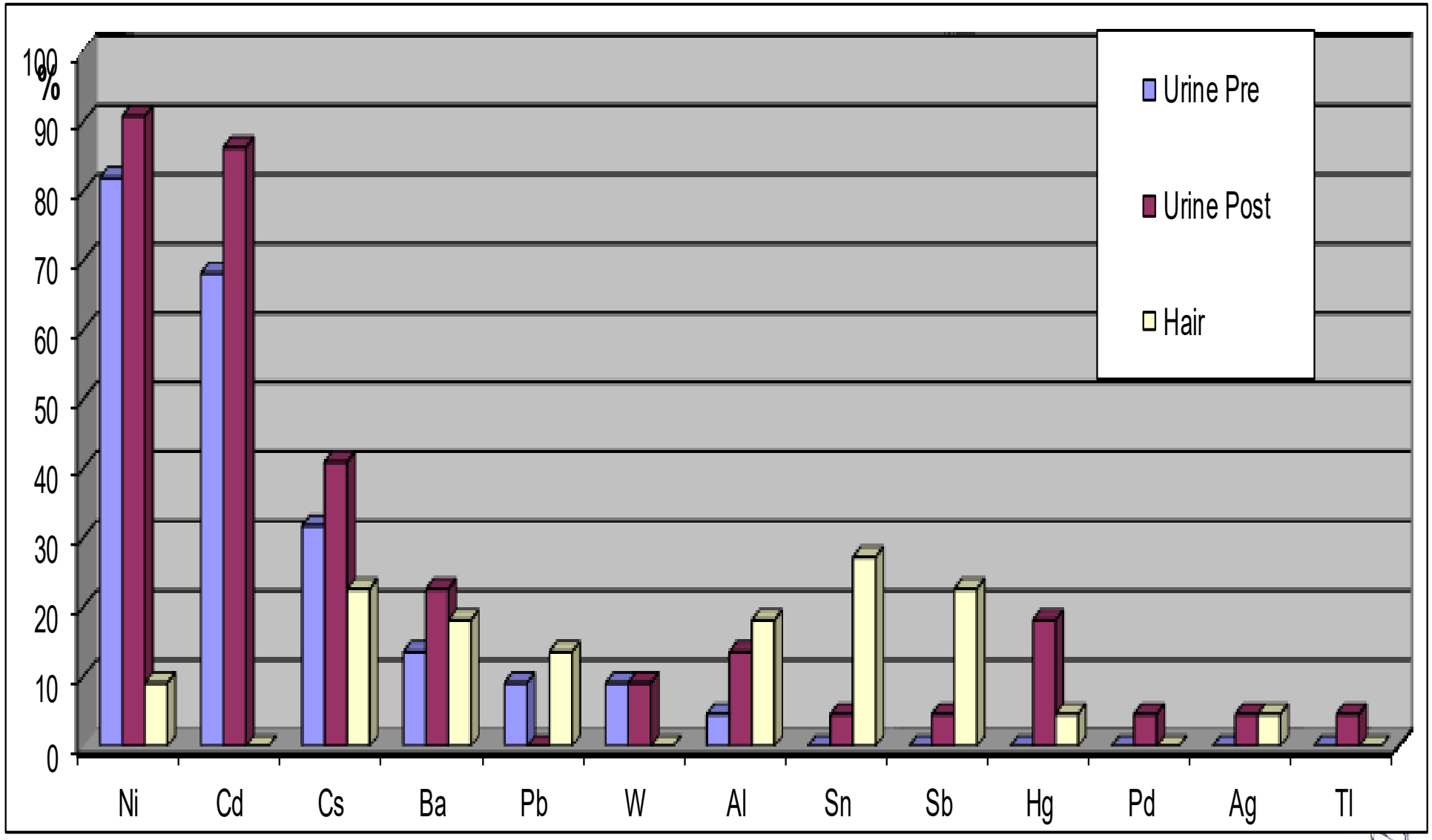
From the abstract: *The aim of this study was to investigate melatonin-related findings in autism spectrum disorders (ASD), including autistic disorder, Asperger syndrome, Rett syndrome, and pervasive developmental disorders, not otherwise specified*

…..an abnormal melatonin circadian rhythm, ***below average physiological levels of melatonin*** *and/or melatonin derivates, and a positive correlation between these levels and autistic behaviours in four studies*

*"****Melatonin administration in ASD*** *is associated with* ***improved sleep parameters, better daytime behaviour****, and minimal side effects. Additional studies of melatonin would be helpful to confirm and expand on these findings"*

Sokolovic, Dusan, et al. "Melatonin reduces oxidative stress induced by chronic exposure of microwave radiation from mobile phones in rat brain." *Journal of radiation research* 49.6 (2008): 579-586.

The Ionic Footbath



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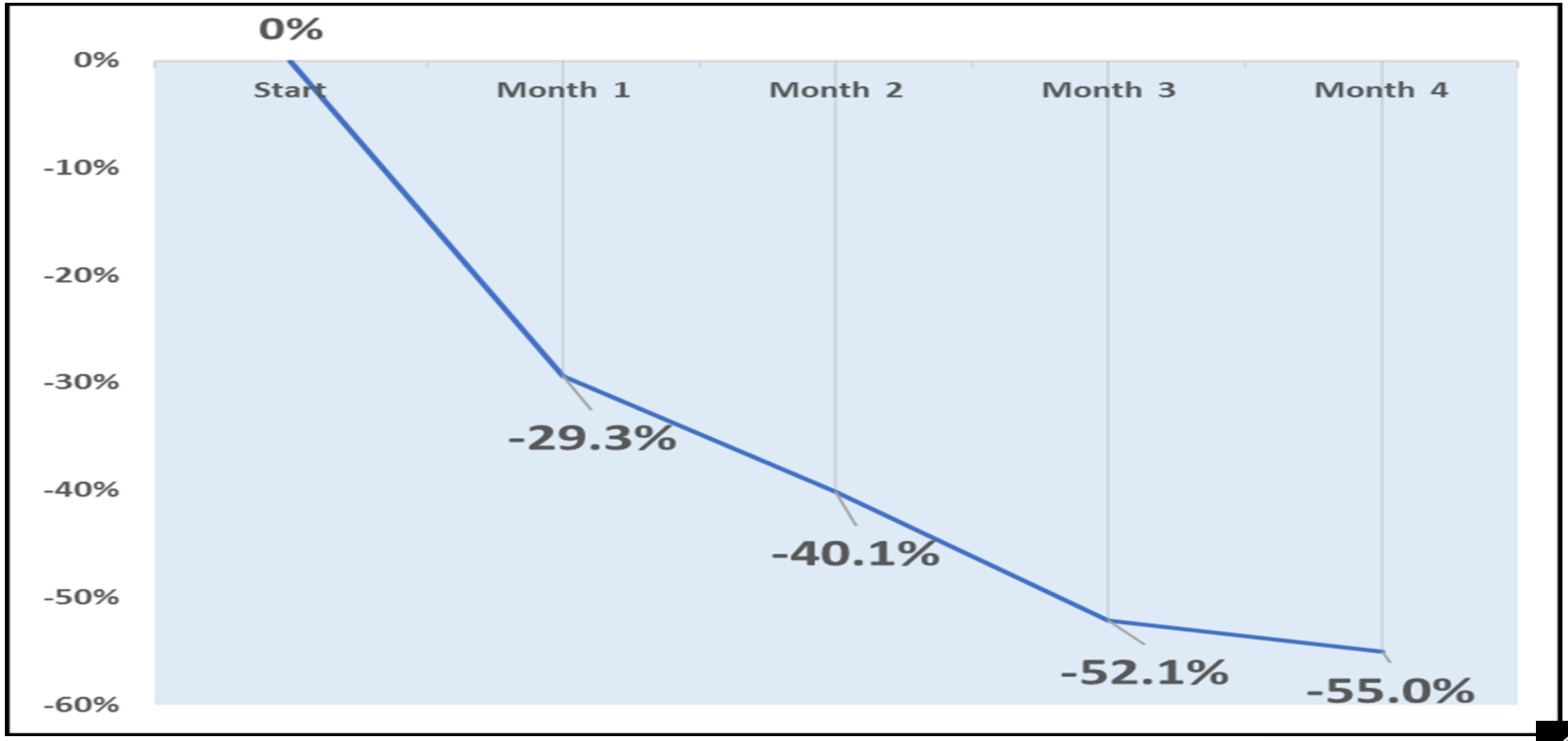
Study Results: 4 months, 3 days on, 1 day off



Average ATEC reduction was 55%!

Klinghardt Ins
The Heart C

Other Practical Solutions

"**Melatonin** reduces oxidative stress induced by chronic exposure of microwave radiation from mobile phones in rat brain." *Journal of radiation research* 49, no. 6 (2008): 579-586; D. Sokolovic, B. Djindjic, J. Nikolic, G. Bjelakovic, D. Pavlovic, G. Kocic, D. Krstic, T. Cvetkovic, and V. Pavlovic.

"A novel antioxidant agent caffeic acid phenethyl ester (from **Propolis**) prevents long-term mobile phone exposure-induced renal impairment in rat." *Molecular and cellular biochemistry* 277, no. 1 (2005): 73-80; Ozguner, Fehmi, F. Oktem, A. Ayata, A. Koyu, and H. Ramazan Yilmaz.

Biomedical Research 2012; 23 (1): 147-151 Oxidative stress in hippocampus induced by 900 MHz electromagnetic field emitting mobile phone: Protection by **melatonin** Memduh Kerman1 , Nilgun Senol2

Targeting oxidative stress response by **green tea polyphenols:** clinical implications; E. C. Yiannakopoulou; Free Radical Research. Sep 2013, Vol. 47, No. 9: 667-671

Ozgur, E., G. Guler, and N. Seyhan. 2010. Mobile phone radiation-induced free radical damage in the liver is inhibited by the antioxidants **N-acetyl cysteine** and epigallocatechin-gallate. Int J Radiat Biol 86 (11):9

Selenium and l-Carnitine Reduce Oxidative Stress in the Heart of Rat Induced by 2.45-GHz Radiation from Wireless Devices; Y.Türker, M. Nazıroğlu, N. Gümral, Ö. Çelik, M. Saygın, S. Çömlekçi, M. Flores-Arce; Biological Trace Element Research. Dec 2011, Vol. 143, No. 3: 1640-1650

"Protective effects of **β-glucan** against oxidative injury induced by 2.45-GHz electromagnetic radiation in the skin tissue of rats." *Archives of dermatological research* 304, no. 7 (2012): 521-527 A. Murat, V. B. Akkaya, Ş. C. Güleçol, B. M.Ceyhan, F. Özgüner, and W. C. Chen.

Radiation protection and anti-oxidative effects of **garlic, onion and ginger extracts**, x-ray exposed albino rats as model for biochemical studies. *African Journal of Biochemistry Research*, *8*(9), 166-173; Nwachukwu, K. C., Asagba, S. O., Nwose, C., & Okoh, M. P. (2014).

Towards a **Peroxinitrite Solution**

Hooper, D. C., Scott, G. S., Zborek, A., Mikheeva, T., Kean, R. B., Koprowski, H., & Spitsin, S. V. (2000). **Uric acid, a peroxynitrite scavenger**, inhibits CNS inflammation, blood–CNS barrier permeability changes, and tissue damage in a mouse model of multiple sclerosis. *The FASEB Journal*, *14*(5), 691-698.

Wilson, C. W. M. "The protective effect of auto-immune buccal **urine therapy** (AIBUT) against the Raynaud phenomenon." *Medical hypotheses* 13.1 (1984): 99-107.

Cuzzocrea, S., Zingarelli, B., Gilad, E., Hake, P., Salzman, A. L., & Szabó, C. (1997). Protective effect of **melatonin** in carrageenan-induced models of local inflammation: relationship to its inhibitory effect on nitric oxide production and its peroxynitrite scavenging activity. *Journal of pineal research*, *23*(2), 106-116.

Mainah, H. S., & Adriani, L. (2011). Change of blood ammonia level and efficiency of nitrogen utilization in Priangan lambs due to **klinoptilolit (Lava Vitae)** addition in ration. *Lucrari stiintifice. Seria Zootehnie-Universitatea de Stiinte Agricole si Medicina Veterinara Ion Ionescu de la Brad (Romania)*.

Treatment: **Lava Vitae**, 2-3 capsules2-3 times/day. Consider AIBUT tx in all neurologically impaired patients (urine contains 500-900 mg uric acid/liter). Melatonin: use larger doses of **Propolis** tincture (KiScience)

To decrease toxic metal burden (KiScience products)

- **Kaqun** water: ½ -1 liter/day to increase tissue oxygen levels
- Regular colonics (once weekly), in between also frequent **coffee enemas. Sauna** for PBDEs
- **KI-Science Cilantro (Coriandolo)**: 2 dropperfull 3 times a day 30 min before meals (work slowly up to this dose) (for Aluminium, mercury and lead)
- 20-30 min **ionic foot bath** before going to bed (for aluminium)
- ½-1 tsp **LavaVitae** (strong binder) 15-30 min after meals / or **chlorella** 15 tbl. t.i.d. (for glyphosate, organophosphates, fluoride etc.)
- 6-8 cusps of Sardinian wild harvested **Cistus** tea –leaves and flowers (for persistent Borrelia infection, biofilm breaker and insect bite prevention)

$Ca\text{-}Na_2\text{-}EDTA$ (caveat: this is not sodium EDTA!!!)

Ca-EDTA slow push/fast drip

50 mg/kg, not to exceed 3 gm

$T^{1/2}$ about 30-45 minutes

6 hr. urine collection

DMPS challenge

IV: 3-5 mg/kg (250 mg max), **slow** push (5-10 min.)

Oral: 10 mg /kg BW (5 mg/kg children), empty stomach(empty bladder).Withhold food about 2 hrs.Encourage ~ 0.5L fluid over next few hrs. Collect all urine for 6 hrs.

German toxicologists have used up to 1000 mg slow i.v. push in patients with advanced neurological illness

DMSA challenge (oral):20-30 mg DMSA/kg BW as oral bolus on empty stomach (≤ 2 gms).Withhold food about 2 hrs. Encourage ~ 0.5L fluid over next few hrs. Collect all urine for 6 hrs.Give 2 gms of glycine 30 min before

J Nutr Envir Med (1998) 8:219-231

D-Pencillamine protocol- 500mg three times per day 2 days per week (R.Jaffe PhD)

Desferal: reconstitute vial with 10 ml distilled water. Inject half segmentally subcutaneously around the abdomen. The other half 2-3 days later. Keep refridgerated

Other intravenous options

- IV Vitamin C: 37-50 grams in 500 ml distilled water with 10 ml Ca gluconate
- Glutathione: 600-4000 mg 1-3x weekly, IV push (always include i.m or i.v Magnesium once-twice weekly)
- Alpha-lipoic acid: 600 mg in normal saline (250 cc) over 1 hr
- Phospholipids (Lipostabil): 2 ampoules diluted with client's blood (50:50) given slow IV over 3 minutes, then followed by glutathione
- Conventional NaEDTA Protokoll (ACAM), aka EDTA Chelation Therapy
- Zinc DTPA: 1 amp. Once weekly i.v.

What happens to Melatonin, if the transmitter of EMR stops?

Altpeter et al. 2006. Effect of Short-Wave (6-22 MHz) Magnetic Fields on Sleep Quality and Melatonin Cycle in Humans: The Schwarzenburg Shut-Down Study. Bioelectromagnetics 27:142-150.

Abstract: This paper describes the results of a unique "natural experiment" of the operation and **cessation of a broadcast transmitter** with its short-wave electromagnetic fields (6-22 MHz) on sleep quality and melatonin cycle in a general human population sample.

In 1998, 54 volunteers (21 men, 33 women) were followed for 1 week each before and after shut-down of the short-wave radio transmitter at Schwarzenburg (Switzerland). Salivary melatonin was sampled five times a day and total daily excretion and acrophase were estimated using complex cosinor analysis. Sleep quality was recorded daily using a visual analogue scale. Before shut down, self-rated sleep quality was reduced by 3.9 units (95% CI: 1.7-6.0) per mA/m increase in magnetic field exposure. The corresponding decrease in melatonin excretion was 10% (95% CI: - 32 to 20%). **After shutdown, sleep quality improved** by 1.7 units (95% CI: 0.1-3.4) per mA/m decrease in magnetic field exposure. **Melatonin excretion increased by 15%** (95% CI: -3 to 36%) compared to baseline values suggesting a rebound effect. Stratified analyses showed an exposure effect on melatonin excretion in poor sleepers (26% increase; 95% CI: 8-47%) but not in good sleepers. **Change in sleep quality and melatonin excretion was related to the extent of magnetic field reduction** after the transmitter's shut down in poor but not good sleepers. However, blinding of exposure was not possible in this observational study and this may have affected the outcome measurements in a direct or indirect (psychological) way. http://www.ncbi.nlm.nih.gov/pubmed PMID: 16342198

What happens, when people remove or mitigate the source?

Röösli, Martin, et al. "Symptoms of ill health ascribed to electromagnetic field exposure–a questionnaire survey." International Journal of Hygiene and Environmental Health" 207.2 (2004): 141-150

Abstract: From June 2001, health questionnaires were distributed to people who complained about symptoms of ill health which they ascribed to exposure to electromagnetic fields (EMF). The objective of the survey was to gain a better knowledge of the anxieties of complainants, to obtain hints of possible problems and of actions that should be taken to solve the problems. The survey was not designed to establish a causal association between exposure to EMF and symptoms of ill health. Within one year, 429 questionnaires were returned of which 394 persons reported symptoms. The average age of the complainants was 51.0 years and 57 percent were female. The complainants were older, had a higher educational level and were more likely to be married compared to the general Swiss population. A mean of 2.7 different symptoms were reported. Sleep disorders (58%), headaches (41%), nervousness or distress (19%), fatigue (18%), and concentration difficulties (16%) were most common complaints. Complainants related their symptoms most frequently to exposure to mobile phone base stations (74%), followed by mobile phones (36%), cordless phones (29%) and power lines (27%). No distinct symptoms related to a specific field source could be identified. Eighty-five percent of the people who consulted a public authority because of their symptoms were unsatisfied with the response, whereas consultation of self-help groups or building ecologists usually fulfilled expectations. Two thirds of complainants had taken some action to reduce their symptoms. The most common measure was to avoid exposure if possible. Removing or disconnecting indoor sources was judged to be the most effective action.