

## **Radiation Risks:**

In nuclear explosions, radiation is a one-time event. With nuclear explosions, cancers may be prevented by cell death. In contrast, intermediate radiation can damage, mutate, or encourage cell growth.

Radiation exposure is cumulative. For this reason, workers exposed to high levels of radiation are often tested to assess lifetime exposure. Intermediate exposures are also noted and limited, whether from air travel, traffic radar guns, or cellular antennas: these exposures tend to be continuing rather than a one-time event. These can be quite dangerous as cumulative damage occurs.

*Data above gleaned from reading Radiation (2013) by scientist and physician R. P. Gale*

A 1972 report by the US Naval Medical Research listed over 100 abnormalities resulting from microwave and radiofrequency radiation, including cancer, neurological diseases, heart palpitations, fatigue, decreased fertility, altered fetal development, depression, changes in DNA, and headaches. Research continues to fine tune understanding. For example, a 2010 study by Esmekaya showed that pulse modulated 900 MHz radiation induced hypothyroidism and apoptosis, i.e. cell death, in thyroid cells.<sup>1</sup>

On April 14, 2008, the Russian National Committee on Non-Ionizing Radiation Protection (WHO contact) published a statement warning heavily of adverse health, behavior, and mental impacts from mobile communications.<sup>2</sup> The committee's opinion continued to set out the immediate dangers: "disruption of memory, decline of attention, diminishing learning and cognitive abilities, increased irritability, sleep problems, increase in sensitivity to the stress, increased epileptic readiness;" and then laid out possible, later risks: "brain tumors, tumors acoustical and vestibular nerves (in the age of 25-30 years, Alzheimer's disease, "got dementia," depressive syndrome, and the other types of degeneration of the nervous structures of the brain (in the age of 50 to 60)."

## **Increasing Cancer Risks**

- 2009 US Cancer Panel Report, which raises concern regarding wireless use. States at onset: "The Panel was particularly concerned to find that the true burden of environmentally induced cancer has been grossly underestimated."
- G. Solomon. Brain and Central Nervous System Tumors: Peer Reviewed Analysis. (Revised 15 April 2003) Available at *Collaborative on Health and the Environment* address: [http://www.healthandenvironment.org/brain\\_cancer/peer\\_reviewed](http://www.healthandenvironment.org/brain_cancer/peer_reviewed)

*Quotations from above study "Brain tumors are the second most common form of cancer in children, and are the leading cause of cancer death in children under age 20, now surpassing acute lymphoblastic leukemia (ALL) (American Cancer Society 2000). Boys are more likely to develop central nervous system tumors than girls (Gurney et al. 1999). Brain cancers are increasing in children. From 1973 to 1994, the number of reported brain tumors in children under 15 increased 1.8% per year (Smith et al. 1998). In adults, the number of brain tumor cases in the U.S. and Europe has increased by up to*

40% over the past 20 years. The rates have increased among people of all ages, but males between the ages of 20 and 40 are the most affected (Lorenzi 2003). Brain cancers are the third leading cause of cancer death in young adults ages 20-39 (Ries et al. 1999)." (emphasis added)

"Moreover, the increase appears to have continued for many years (Bleyer 1999). If the increase were due entirely to improved detection, one might expect to see a plateau and then a reduction in new cases once the better detection method is adopted."

- The 7-year Cardis Study (January 2, 2012) *Occupational Environmental Medicine*: Increased risk of glioma (brain tumor) and lower risk of meningioma (a tumor of membrane surrounding brain) in long-term mobile phone uses. According to commentary from Dr. Magda Havas:

"This study included data from five countries-Australia, Canada, France, Israel and New Zealand-and, in this line-up, Canada fared the worst for gliomas (statistically significant increased risk of 248%) and New Zealand fared the worst for meningiomas (452% increased risk marginally insignificant at  $p=0.05$ ) . . .

- F. de Vocht, K. Hannam, L. Buchan *Environmental risk factors for cancers of the brain and nervous system: the use of ecological data to generate hypotheses* (2012)

Scientist L. Hardell explains above study: "the only exogenous risk factor consistently associated with higher incidence of brain and nervous system tumors is the penetration rate of mobile phone subscriptions" (emphasis added) and he notes a latency of 11-20 years.

- 2014 WHO predicts of cancer increases of 70% over the next two decades. Presently: 14m cases in 2012; 70% Increase: 23m cases in 2032
- In 2010, the Berliner Robert-Koch-Institut in Germany found that cancer risk had increased: 90% more for men, 40% for women.
- Kyu-Won Jung, Young-Joo Won, Hyun-Joo Kong, Chang-Mo Oh, Hong Gwan Seo, and Jin-Soo Lee. Cancer Statistics in Korea: Incidence, Mortality, Survival and Prevalence in 2010 (2013) *Journal Of the American Cancer Institute*

1999-2010 the annual increase all cancer was 3.3 % ( $p<0.05$ ).

Thyroid cancer annual 24.8 % (men) and 24.2 % (women) respectively.

Tumors in the brain and nervous system increased annually 1.0 % ( $p<0.05$ ) in men and 0.5 % in women

### **Increasing Alzheimer's and Multiple Sclerosis Risks**

Blood-brain permeability is an often cited result of mobile phone use.<sup>iii, iv, v, vi</sup> Failure of the blood-brain barrier is a vital component of Alzheimer's and Multiple Sclerosis. Even given a latency period, these diseases should have increased over this decade if related to the failure of the blood-brain barrier as caused by increasing artificial electromagnetic exposures. In 2000, with the popularity of the mobile phone, electromagnetic exposures began jumping exponentially.

Additionally, the diseases each show correlations with microwave sickness, such as the mood swings or forgetfulness of Alzheimer's. Multiple sclerosis patients show corollaries such as muscle weakness of the limbs, forgetfulness, and temporary or permanent disability. The National Multiple Sclerosis Society reports risk for women is presently 3 times higher than that for men.<sup>vii</sup>

2013 epidemiological research of multiple sclerosis indicates that from 2001 to 2010, hospitalization rates increased by 40 percent.<sup>viii</sup> Similarly, from 2000 through 2010, Alzheimer's death rates, with adjustments for age, increased by 39 percent!<sup>ix</sup> Again, women's risk of death from Alzheimer's is 30 percent higher.<sup>x</sup>

### **Increased ADHD, Autism, learning disability Risks:**

Based on the list of symptoms provided by the Russians, ADHD, Autism, and learning disabilities mimic symptoms of microwave and radiowave exposure. Hence, ADHD should have increased, causing distress within school systems.

According to the Center for Disease Control and Prevention, the percentage of children with a parent-reported ADHD diagnosis increased by 22% from 2003 to 2007. In the same time frame, diagnosis rates increased 5.5% per year, in contrast to an average of 3% per year from 1997 to 2006.

Dr. Martha Herbert, Ph.D., MD, prepared a report for the *Bioinitiative Review 2012* with over 550 citations connecting electromagnetic frequencies, including radiofrequencies, to autism. In her letter to the Los Angeles School District on February 8, 2012, she states: "EMF/RFR from wifi and cell towers can exert a disorganizing effect on the ability to learn and remember, and can also be destabilizing to immune and metabolic function."

According to the United Federation of Teachers, poor student discipline is one of the top five reasons for teacher attrition.<sup>xi</sup> From 2011-2012, and despite the economic downturn, 9.4 percent of new teachers quit before the end of first year. At the same time, one third of remaining new teachers had left by the fourth year. On the other end of the spectrum, experienced teachers and staff are leaving early and rapidly.<sup>xii</sup> The impact of electromagnetic radiation is not being considered in the performance of students, teachers, or administration, although the magnitude of radiation is steadily increasing.

**Consider the number of devices, add them together.** *Wi-Fi in Schools: Testing for Microwave Radiation in Schools*, is a Utube video recording measurements of background radiation versus radiation emitted within an elementary school.<sup>xiii</sup> Outdoor measurements in town were approximately 11 to 14 mV/m. Within the Vermont Calais School, levels were 1 V/m or 1000 mV/m in the vicinity of laptops, and 2.857 V/m or 2857 mV/m in front of the laptops. For comparison, readings of 800-900 mV/m were taken directly before a cell tower, levels found in the center of the school rooms.

### **Exposure and Smart Meters**

Similarly, the smart meter grid increases exposure levels, creating a wireless world with accumulating damage. At this point, questions remain over whether safe levels of exposure exist.

Wireless meters may transmit with an average anywhere from 35 to 100 mW/cm<sup>2</sup> and up, such as those measured by my residence. However, studies listed in the *Bioinitiative Review 2012* are thousands of times below this level, including results such as the following in the averaged measurement of microwatts, which is much smaller than milliwatts (all numbers following are measurements in microwatts):

- A pathological leakage in the blood-brain barrier with 915 MHz cell RF (120)
- RFR caused changes in hippocampus (brain memory and learning) (4 )
- Memory impairment, slowed motor skills and retarded learning in children (4-15 )
- RFR caused impaired nervous system activity (5-10)
- RFR caused drop in NK lymphocytes (immune function decreased)
- RFR affected calcium concentrations in heart muscle cells (2.5)
- RFR at 900 MHz for 2-12 hours caused DNA breaks in leukemia cells (8.75)

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<sup>i</sup> P Esmekaya MA et al, (December 2010) Pulse modulated 900 MHz radiation induces hypothyroidism and apoptosis in thyroid cells: a light, electron microscopy and immunohistochemical study, *Int J Radiat Biol.* 2010 Dec;86(12):1106-16. Epub 2010 Sep 1

<sup>ii</sup> Russian National Committee of Non-Ionizing Radiation Protection—2008 report. World Health Organization.

<sup>iii</sup> Effects of GSM mobile phone radiation on blood-brain barrier. Dariusz Leszczynski. 2002. *Proceedings of the URSI Meeting*, Maastricht, The Netherlands.

<sup>iv</sup> Nerve cell damage in mammalian brain after exposure to microwaves from GSM mobile phones. Leif G. Salford, Arne E. Brun, Jacob L. Eberhardt, Lars Malmgren, Bertil R.R. Persson. 2003. *Environmental Health Perspectives* 111(7): 881-883, June 2003

<sup>v</sup> Eberhardt JL, Persson BR, Brun AE, Salford LG, Malmgren LO. Blood-brain barrier permeability and nerve cell damage in rat brain 14 and 28 days after exposure to microwaves from GSM mobile phones. *Electromagn Biol Med.* 2008 ;27(3):215-29. doi: 10.1080/15368370802344037

<sup>vi</sup> Aalto S, Haarala C, Bruck A, Sipila H, Hamalainen H, Rinne JO. Mobile phone affects cerebral blood flow in humans. *J Cereb Blood Flow Metab.* 26(7):885-890, 2006.

<sup>vii</sup> <http://www.nationalmssociety.org/about-multiple-sclerosis/what-we-know-about-ms/who-gets-ms/epidemiology-of-ms/index.aspx>

<sup>viii</sup> Sanobar Nusrat, David Levinthal, and Klaus Bielefeldt, "Hospitalization Rates and Discharge Status in Multiple Sclerosis," *Multiple Sclerosis International*, vol. 2013, Article ID 436929, 7 pages, 2013. doi:10.1155/2013/436929

<sup>ix</sup> Tejada-Vera B. Mortality From Alzheimer's Disease in the United States: Data for 2000 and 2010. NCHS data brief, no 116. Hyattsville, MD: National Center for Health Statistics. 2013.

<sup>x</sup> Tejada-Vera B. Mortality From Alzheimer's Disease in the United States: Data for 2000 and 2010. NCHS data brief, no 116. Hyattsville, MD: National Center for Health Statistics. 2013.

Smart Meter Radiation Risks Including Statistics for Cancer, Multiple Sclerosis, Autism  
February 27, 2014, Health & Safety Panel 8, DPU docket 12-76-A  
Submitted by Kirstin Beatty, Healing Earth and EMF Refuge

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<sup>xi</sup> McAdoo, Maise. Teacher attrition up after recession-driven lull. 31 Jan 2013 United Federation of Teachers New York Teacher issue. <http://www.uft.org/insight/teacher-attrition-after-recession-driven-lull#attrition>

<sup>xiii</sup> <http://www.youtube.com/watch?v=FO0AnNH28vI&feature=related>