

Health and Environmental Concerns Regarding Mobile Phone Base Stations (Cell Towers)

The current studies we have suggest both short-term and long-term health risks within 300-400 meters of a cell tower. Thus, great precautions should be taken to site cell towers away from the most vulnerable segments of the population, such as children.

This document summarizes the increasing recognition of the potential health risks of cell towers from governments and scientists worldwide. While the issue of health concerns is considered to be controversial, much of this controversy is manufactured by key stakeholders and industry lobbyists. There has been a body of scientific evidence on the dangers of microwave technologies, since a decade ago, and many governments are only beginning to take action.

1. Government Recognition of the Hazards

On April 2, 2009, the **European Parliament** overwhelmingly passed a resolution on “Health Concerns Associated with Electromagnetic Fields (EMFs)”. One of the resolutions is that the wireless telecommunications facilities should *not* be placed near schools, places of worship, retirement homes, and health care institutions. See <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P6-TA-2009-0216&format=XML&language=EN>

In 2009, the **L.A. County Board of Supervisors** voted unanimously to seek federal legislation to overturn Section 704 of the Telecommunications Act of 1996, which takes away local government rights to refuse cell towers for health reasons. Since then, several other local governments in California, Arizona, New Mexico, and Oregon have passed similar resolutions. <https://www.cloutnow.org/localres/>

2. Outdated Safety Standards

Complying with international standards does *not* guarantee the actual safety of cell towers. Existing safety standards for cell towers are thousands of times above levels found in scientific research to cause biological effects. The current widely adopted international standard is that of ICNIRP (1998), which specifies power densities of **9000 mW/m²** for 1800 MHz and **4500 mW/m²** for 900 MHz. In contrast, recommendations based on scientific evidence from a decade ago, are thousands of times lower. Only a few countries have been moving towards these stricter limits, e.g., Liechtenstein (1 mW/m²) in 2008.

2001 Salzburg Resolution	1 mW/m² (or 0.06 V/m)	http://www.salzburg.gv.at/celltower_e
2001 EU Parliament STOA 2001	0.100 mW/m ² (10 nW/cm ²)	
2002 Updated Salzburg Outdoor Limit	0.010 mW/m² (0.06 V/m)	
2007 BioInitiative Report	1 mW/m ²	
2008 Building Biology (SBM-2008)	>1 mW/m ² is of extreme risk	http://www.baubiologie.de/downloads/english/richtwerte_2008_englisch.pdf

Several studies suggest that a 300 to 400 meter minimal setback is required from a cell tower to avoid the risk of cancer and other health effects.

3. Appeals and Resolutions in the Last Decade

In the last decade, numerous scientific research papers, resolutions, and appeals have been published, expressing concern regarding low levels of electromagnetic radiation, such as from cell towers.

2011	The <i>Seletun Scientific Statement</i> (7 scientists in 5 countries), based on the 2009 International EMF Conference in Norway (http://emf2009.no/index.php/1293324), calls for reduced exposure limits from power line and telecommunications technologies, and reports findings of adverse effects down to 0.17 mW/m ² : http://electromagnetichealth.org/wp-content/uploads/2010/12/The-Seletun-Scientific-Statement1.pdf
2010	B. Blake Levitt and Henry Lai published an extensive literature review in the Canadian journal, <i>Environmental Reviews</i> , which compiles many studies of low levels of non-ionizing radiation. http://www.magdahavas.com/wordpress/wp-content/uploads/2010/11/Blake_Levit-Henry_Lai.pdf An <i>Indian government panel</i> reports on the dangers of both cell towers and cell phones: http://www.dnaindia.com/india/report_its-official-now-radiation-from-your-cell-phone-may-be-killing-you_1489258 http://www.dot.gov.in/miscellaneous/IMC%20Report/IMC%20Report.pdf
2009	<i>The Journal of Pathophysiology</i> , August 2009 issue, is dedicated to the Health and Environmental Concerns related to Electromagnetic Fields, and includes reports on the dangers of cell towers to human health and wildlife: http://www.ntia.doc.gov/legacy/broadbandgrants/comments/71B9.pdf
2008	<i>Venice Resolution</i> http://www.icems.eu/resolution.htm
2007	The <i>BioInitiative Report</i> of 2007 compiles approximately 2,000 studies on the health effects of electromagnetic fields, including studies at nonthermal nonionizing levels considered “safe” by international safety standards. The <i>London Resolution</i> calls for outdoor RF limits of 0.06 V/m = 0.010 mW/m ² , based on the Salzburg 2002 precautionary limit. http://www.icems.eu/docs/resolutions/London_res.pdf
2006	The <i>Benevento Resolution</i> , 2006 http://www.icems.eu/benevento_resolution.htm
2005	The <i>International Association of Firefighters</i> (IAFF) petitioned for a health study on cell towers because firefighters were affected by disabling illnesses after the installations. http://www.iaff.org/hs/Facts/CellTowerFinal.asp The <i>Irish Doctors’ Environmental Association</i> (IDEA) acknowledges increasing complaints from electromagnetic radiation. <i>Hofer Appeal, Lichtenfelser Appeal, Helsinki Appeal, Freienbacher Appells</i>
2004	<i>Bamberger appeal</i>
2002	The <i>Freiburger appeal</i> is signed by many German physicians concerned by the health effects of cell towers, cell phones, and DECT cordless phones http://www.powerwatch.org.uk/pdfs/20021019_englisch.pdf The <i>Catania Resolution</i> http://www.icems.eu/benevento_resolution.htm
2000	The Salzburg International Conference on Cell Tower Siting, Linking Science & Public Health, established biological effects at very low levels of wireless radiation, from which we have the <i>Salzburg Resolution</i> . http://www.salzburg.gv.at/celltower_e

4. Summary of the Scientific and Epidemiological Evidence

Two important reviews on cell tower studies include:

- Henry Lai and B. Blake Levitt's article in *Environmental Reviews* (2010). See “10. Studies on exposure to cell tower transmissions” in http://www.magdahavas.com/wordpress/wp-content/uploads/2010/11/Blake_Levit-Henry_Lai.pdf
- Michael Kundi and Hans-Peter Hutter 's article in the Journal of Pathophysiology, “Mobile phone base stations—Effects on wellbeing and health” .
http://www.ccst.us/projects/smart/documents/082009_Kundi_Mobile_Phone_Base_Station.pdf

The evidence falls into at least 4 categories, including in cancer epidemiological studies, survey studies on symptoms of residents near base stations, in vitro studies, and animal/plant studies.

A. Cancer

Cancer has been reported in close proximity of cell towers, e.g.,

- **Naila, Germany:** 3x new malignancies within 400 m after **5 years** exposure (Eger, 2004)
 - http://www.emrpolicy.org/science/research/docs/eger_naila_2004.pdf
- **Netanya, Israel:** 4x cancer within 350 m (Wolf and Wolf, 2004)
- **UK:** 7 cancer clusters discovered around mobile phone masts (2007)

Other studies have found increased cancer from radio and TV broadcast towers. According to the Levitt/Lai review, cancers around broadcast towers include childhood leukemia, adult leukemia, and lymphoma clusters, elevated brain tumor incidence, and malignant melanoma.

- **Radio tower in Rome** (Michelozzi, 2002), and recent court-ordered Vatican radio tower study
- **Sutro Tower, San Francisco** (Cherry, 2000)
- **Sutton Coldfield TV Tower, Great Britain** (Dolk, 1997)
- **Australia TV Tower** (Bruce Hocking, 1996)

B. Other Health Symptoms

The WHO fact sheet claims “From all evidence accumulated so far, no adverse short- or long-term health effects have been shown to occur from the RF signals produced by base stations.” However, this is questionable given that “**10 out of 14 peer-reviewed scientific studies on people exposed to Mobile-Phone mast (cell-tower) radiation show adverse health effects.**” <http://www.mast-victims.org/index.php?content=who> Many studies reported increasing health symptoms in close proximity to mobile phone base stations (cell towers). For example, the following are some studies regarding the health symptoms:

- **Santini, 2002** - <http://www.ncbi.nlm.nih.gov/pubmed/12168254>
- **Santini 2003** - http://www.emrpolicy.org/science/research/docs/santini_ebm_2003.pdf
- **Navarro, 2003** - <http://www.ncbi.nlm.nih.gov/pubmed/12168254>
- **Abdel-Rassoul, 2007** - (Egypt) <http://www.ncbi.nlm.nih.gov/pubmed/16962663>
- **Preece, 2007** – (Cyprus) <http://www.ncbi.nlm.nih.gov/pubmed/17259164>
- **Bortkiewicz , 2004** - (Poland) <http://www.ncbi.nlm.nih.gov/pubmed/16962663>
- **Rössli, 2004** - <http://www.ncbi.nlm.nih.gov/pubmed/15031956>
- **Zwamborn, 2003:** Study by Dutch Technical Research Institute
- **Oberfield, 2004** (Spain)
- **Eger, Jahn, 2009** (Germany) http://www.emrpolicy.org/science/research/docs/eger_selbitz_2009.pdf

See <http://www.powerwatch.org.uk/rf/masts.asp> and http://www.emrpolicy.org/science/research/fact_sheet.htm

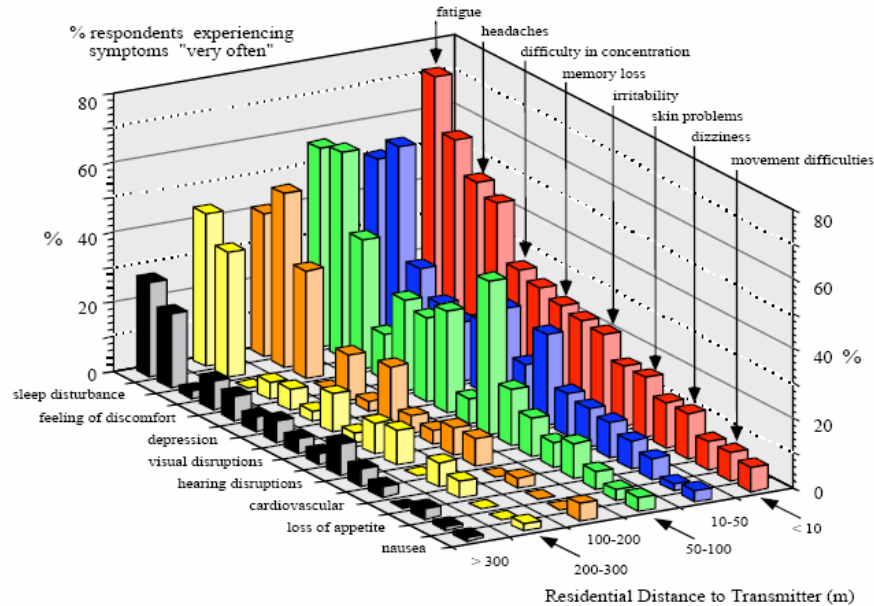


Image from http://www.magdahavas.org/wordpress/wp-content/uploads/2009/10/05_HavasNCRFRTV.pdf : Residents near a cellular phone base station in Spain (Santini)

C. In Vitro Studies and Animal/Plant Studies

Many of these symptoms (headaches, dizziness, fatigue, nausea, insomnia, memory loss, and difficulty concentrating) may actually have a biological basis. For example, microwave radiation is known to change neurotransmitter levels such as acetylcholine (Henry Lai), open the blood brain barrier (Allan Frey, Leif Salford, Oscar and Hawkins, and Albert and Kerns), cause neuronal death and memory loss in rats (Leif Salford, Henry Lai, Lukas H. Margaritis), cause calcium efflux in brain tissue (C.F. Blackman, Ross Adey), cause calcium efflux in animal hearts (Schwartz et al), create stress proteins (Martin Blank), increase production of histamines, cause DNA breaks (shown by ~11 studies), increase free radicals (shown by ~24 papers since 1997), and so on.

- In the Journal of Pathophysiology, the article “Electromagnetic fields stress living cells” by M. Blank and R. Goodman reports on the cellular stress response from electromagnetic fields, and the potential DNA breaks that could result.
- In the Journal of Pathophysiology, the article "Electromagnetic pollution from phone masts. Effects on wildlife" by Alfonso Balmori, reviews the literature which demonstrates adverse effects on birds, mammals, amphibians, insects, trees, and plants.

Some Additional Resources:

- <http://www.electromagnetichealth.org>
- <http://www.radiationresearch.org> and http://www.radiationresearch.org/pdfs/20061101_base_stations_health_concerns.pdf
- <http://www.icems.eu/>
- <http://www.fullsignalmovie.com/>
- <http://www.emrpolicy.org/> and <http://www.youtube.com/user/emrpolicyorg>
- http://www.antennafreeunion.org/info_research.htm
- <http://www.emfwise.com/distance.php>