EMF*WISE*

Safety Advice for Electromagnetic Fields (PDF)
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Health Precautions Science

EMF Safety Standards

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Outdated International Safety Standards for Microwaves

Compare our current international safety standards for mobile phone base stations with recommended guidelines for wireless safety below. Current safety limits are dangerously **out of date**.

August 2021 Update: On August 13, 2021, the Environmental Health Trust had a **historic win** challenging the FCC's failure to respond about environmental harm caused by RF.

Year	Power Density Limit	Name	Description
1966	**100,000,000 µW/m^2**	ANSI C95.1	Based on thermal effects
1992	**10,000,000 µW/m^2**	ANSI/IEEE C95.1-1992	Based on thermal effects, first recommended by IEEE ten years earlier in 1982. EPA calls it seriously flawed.
1996	**10,000,000 µW/m^2** **5,800,000 µW/m2**	FCC	USA: 5,800 mW/m2 averaged over a 30-minute period (869 MHz), previously recommended in 1986 by NCRP; 10,000 mW/m2 for PCS frequencies(1.85-1.99 GHz)
1998	**9,000,000 µW/m^2** **4,500,000 µW/m2**	ICNIRP	9000 mW/m2 for 1800 MHz and 4,500 mW/m2 for 900 MHz. 4,500 mW/m2 is the equivalent of 61.0 V/m **Prevalent standard**

The units above are provided in µW/m^2. Check the **conversion formulas** if you need to convert the units to W/cm^2 or V/m.

Standards for personal wireless devices are also extremely high. For example:

- **Microwave Ovens**: The standard is 10,000,000µW/m^2, or 1 mW/cm^2, at a 5 cm distance, for FDA Guidelines for Microwave Ovens.
- **Mobile Phones**: For mobile phones, the standard in the USA is a **SAR** of 1.6 W/kg, based on behavioral disturbances observed in monkeys at 4 W/kg. However, harmful effects are seen in rat brains after only 2 hours of 0.2 W/kg exposure.

Recommended Precautionary Limits for Microwaves

The following precautionary guidelines are based on scientific research about biological and health effects at extremely low power densities. These are approximately 9000 times lower than **international safety standards**, which are based on an outdated dogma maintaining that the only harm of microwaves lies in its thermal effects. Check the **Table of Effects** to see the levels at which various effects have been reported.

Year	Power Density Limit	Name	Description
2001	**1,000µW/m^2**	Salzburg Resolution	Equivalent of 1 mW/m^2 = 0.1 µW/cm^2 = 0.6 V/m ; The recommendation of Salzburg, Austria and now also organizations like BioInitiative and Next-Up. In 2008, Liechtenstein adopts the goal of 0.6 V/m, approximately 1000 µW/m^2 by 2013. **Proposed Limit for Public Exposure to Mobile Phone Base Stations**
2011	**170 µW/m^2**	**Seletun Scientific Statement 2011**	Equivalent of 0.17 mW/m^2
2001	**100 µW/m^2**	EU Parliament **STOA 2001**	Equivalent of 100 nW/cm^2
2002	**10 µW/m^2**	New Salzburg Precautionary Exposure Limit Outdoor	Equivalent of 10 µW/m^2=0.06 V/m The recommendation for GSM 900/1800 mobile phone base stations updated by Salzburg Public Health; See also SBM 2008 below. **Proposed Target for Personal Precaution**
2012	**3-6 µW/m^2**	Bioinitiative 2012 Recommendation	Equivalent of 0.3-0.6 nW/cm^2
2002	**1 µW/m^2**	New Salzburg Precautionary Exposure Limit Indoor	Equivalent of 1 µW/m^2=0.02 V/m Recommendation for indoor exposures, updated by Salzburg Public Health. Burgerforum 1999 & London Resolution of 2007 agree with the New Salzburg Exposure Limit.

Click **here** to see what precautions other governments are recommending for wireless safety.

SBM 2008 (Standard of Building Biology Testing Methods) Guidelines for Sleeping Areas

No Concern	Slight Concern	Severe concern	Extreme concern
<0.1µW/m^2	**0.1µW/m^2 to 10µW/m^2**	**10µW/m^2 to 1000µW/m^2**	**> 1000µW/m^2**

The **Oberfranken study** evaluated medical complaints of 356 people with long-term radiation in their homes. Above 100 microW/m^2, only 5-6% of the people did *not* have adverse health effects. This is a level far below current safety standards.

Compare the radiation received from typical Wi-Fi routers and mobile phone base stations by applying the **Inverse Square Law**.

Safety Standards and Precautionary Guidelines for Power Line Magnetic Fields

In terms of power line magnetic fields, ICNIRP regulations allow for a generous AC (alternating current) magnetic field of **100,000 mG in Europe and 83,330 mG in North America.**

Meanwhile, the Bioinitiative Working Group and Seletun Scientific Panel recommend exposures less than or equal to **1 milligauss**, even though this, too, may turn out to be high. See **factsheet on power lines**.

SBM 2008 (Standard of Building Biology Testing Methods)

No Concern	Slight Concern	Severe concern	Extreme concern
<0.2 mG	**0.2 mG to 1 mG**	**1 mG to 5 mG**	**> 5 mG**

As a reference point, Powerwatch notes that the average level in houses in the UK is **0.5 milligauss**. Nevertheless, I have definitely seen homes or apartments with higher levels than this.

Safety Standards and Precautionary Guidelines for Body Voltages

SBM 2008 (Standard of Building Biology Testing Methods)

No Concern	Slight Concern	Severe concern	Extreme concern
<10 mV	10 to 100 mV	100 to 1000 mV	> 1000 mV

Further References

- **Building Biology SBM 2008 Standards**
- **Building Biology Indoor Environment Checklist**

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