



Measuring Electromagnetic Frequencies (EMF's) Explained

Building biologists generally measure EMF's in three different ways.

- 1) AC Magnetic Fields – with a Gauss Meter
- 2) Radio Frequencies – with a Radio Frequency (RF) meter
- 3) AC Electrical fields – measuring body voltage with a multimeter

1) AC Magnetic Fields (low frequency – 50 Hz) are measured with a **Gauss Meter**. These include EMF's coming from power lines, household or industrial wiring, lighting, building power meter boxes and appliances. Anything that runs on mains AC electricity can be measured by a Gauss Meter for potentially harmful low frequency magnetic fields. A wide range of health complaints have been linked to long term exposure to high level AC magnet fields – more serious conditions include childhood leukemia and breast cancer.

The less time spent in high level AC magnetic fields the better. Typical danger spots include sitting or sleeping against a wall that backs on to a fridge. Electric motors such as those in fridges throw out a powerful magnetic field which will travel through virtually anything including thick concrete or metal walls. As shielding is not an option for magnetic fields, simply remove the source or remove yourself away from the source. Luckily magnetic fields usually only extend a few feet from the source and the strength drops off very quickly. Another area of concern is sleeping or working in a room near the houses power meter box. Again move your bed or chair away from the meter box so you are not bathing in a huge AC magnetic field.

Use a gauss meter to discover the AC magnetic hotspots to avoid in your home or work place.

N.B. While you can measure the magnetic field coming from a buildings power meter box, a gauss meter will not measure radio frequencies being emitted by a smart meter, for this you need a Radio Frequency meter (see below)

What are safe levels of low frequency EMF according to Building Biology?

Measurement unit milligauss - mG

- No concern – under 0.2 mG
- Slight concern – 0.2 – 1 mG
- Severe concern – 1 - 5 mG
- Extreme concern – above 5 mG

2) Radio Frequencies - (High frequency – typically 10MHz – 8GHz) measured with a Radio Frequency (RF) Meter - Devices that emit RF include mobile phone, cordless phones and their base stations, WiFi routers and devices, Bluetooth devices, smart meters, microwave ovens, GPS devices, baby monitors and communication towers to name a few.

N.B. Measuring RF fields is very complex. While many affordable RF meters will give a good indication of the presence of far field RF, they are not completely accurate. Also, they are not meant for measuring RF close to the source (near field) and cannot be used for working out the SAR (Specific Absorption Rate) of mobile phones. Measuring near field RF requires very expensive specialised equipment operated by highly trained technicians.

What are safe levels of high frequency RF according to Building Biology?

Measurement unit microwatts per square meter – uW/m²

N.B. mW/m² = milli-watts. 1 milliwatt = 1000 microwatts

- No concern – under 0.1 uW/m²
- Slight concern – 0.1 – 10 uW/m²
- Severe concern – 10 – 1000 uW/m²
- Extreme concern – above 1000 uW/m²

3) Electrical fields – Like 50 Hz magnetic fields, electrical fields emanate from many AC power sources. They are inherently tricky to measure. Just the presence of a human body will affect the reading on many electrical field meters. Instead of

measuring electrical fields directly, many building biologists instead measure AC body voltage with a multimeter.

The human body naturally has a minute DC current. All AC voltage is man-made and therefore un-natural in the human body. Because we live and work in close proximity to AC power (building wiring, power lines, appliances etc) and our bodies are conductive we inevitably end up with elevated AC voltage readings in our bodies. I am not aware of any studies indicating a safe level of AC voltage in the body so the lower the better. Here is a possible guideline.

What are safe levels of AC voltage in the human body according to Building Biology?

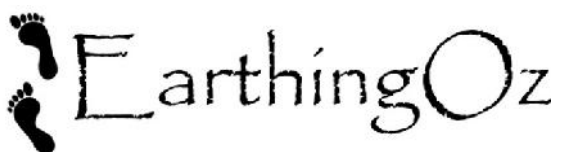
Measurement unit Volts (V) AC

- No concern – under 0.1V AC
- Slight concern – 0.1 – 2V AC
- Severe concern – 2V – 15V AC
- Extreme concern – above 15V AC

We hope this helps ... Minimise EMF Exposure, Stay Grounded and Feel Better!

Best Regards,

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