Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure

https://www.regulations.gov/commenton/HHS-OASH-2026-0397-0001

Date 21/10/26

This submission is split into 3 sections.

1) My experiences.

2) Some generally agreed facts that are not often discussed.

a)
A weak low energy Electromagnetic field may nudge a system without supplying the energy needed to break a chemical bond directly.(Fried and Boxer, Hore, Schneider and Pekker, Pikov et al.)

b)
Oxygenated blood is usually not magnetic but unoxygenated blood is.(Price Dwek et al)

c)
Mitochondria contain iron and sulphur atoms at the same concentration as the doping in rectifying diodes. (Read Bentley et al., Bennett Jr and Onyango, Schlame, Alberts Johnson et al, Pallade, IEEE)

d)
Iron sulphur clusters in the electron transport chain have exactly the same size, shape and structure as Iron Pyrite crystals in Cat's Whisker Radios.(Dutch, Read Bentley et al, Kneen Rogers Simpson)

e)
High Band 5G=Millimeter waves are only two times below the energy level of molecular rotation and their absorption rate is 10 times that of 2.4GHz WiFi. (Price and Dwek et al, IT'IS Foundation)

3) Why me?

Please see Section 1 below.

Section1) My experiences

After I use a laptop on my lap I cannot stand up because my legs have stopped working.

After I hold a smartphone for 10 minutes I cannot feel my fingers because they are stiff and tingling so much.

That started 22 and 8 years ago respectively with the devices off-line and with no mobile data, wifi or bluetooth.

Now things are much worse.
To take part in this conversation, my computer is shielded, filtered, pushed two meters away and has a blue light filter.

I live with permanent:
 ringing in my ears
 dizziness
 and headache
To concentrate or hold a complicatec conversationis nearly impossible.
I am losing my vocabulary and mixing my words.
My muscles have started to twitch overnight.

How do I know it's from electro-smog?
Because away from it the symptoms quickly fade away.
This is not so easy to do. I cannot just go for a walk. There's too much RF around here.
About three years ago at my local children's play area the EMF jumped from about 1 to over 10 microwatts per square meter, average.
I was an Electromagnetic Compatibility engineer, so I know what I'm talking about.
Also, I studied statistics, so I know samples of one do not count. I am really pleased that you are asking for the experiences of many people.

At the moment I can tolerate around:
2 uW/m2 HF RF from 200MHz - 7GHz
(microwatt per meter squared High Frequency radio fields)
For context Baubiologie.de 0.1uW/m2
Nature 0.0000001 uW/m2

70nT magnetic field
For context Baubiologie.de 20nT
Nature 0.0002nT

10 V/m Low Frequency RF
For context Baubiologie.de 0.3V/m
Nature 0.0001 V/m

all measured with an average detector.
With a peak detector my HF RF tolerance is about 0.05V/m.

It gets worse as I get older. A 20 year old person has 5 times more nitric oxide for circulation and brain function than an average 60 year old (Terregrossa Aranke Bryan).

An often quoted cause is:
 Voltage Gated Calcium Channel activation (Martin Pall,el-Swefy)
causing:

Mast Cell activation
and Neural-excitoxicity
and match my symptoms (Ben Lynch, Beth Shirley)
but governments do not accept that as an explanation,
as no-one has done the patch clamp experiments in-vivo
(in living animals).
Could I suggest the government does the experiment?

Therefore I looked for other causes and found these facts that are commonly known and agreed by the scientific and medical communities: see section 2 below.

Section 2) Some generally agreed facts that are not often discussed.

a)
A weak low energy Electromagnetic field may nudge a system without supplying the energy needed to break a chemical bond directly.

A tiny push can matter near a threshold, like a stone rolling down a hill.

Low power, low frequency electric fields can change:
Membrane potential
Dipole strength
Ions position
without a measurable rise in temperature

Enzymes are very sensitive to changes in dipole strength.
They increase rates of reaction by holding reactants in position and weakening or strengthening the bonds.
They have lots of hydrogen bonds.
Hydrogen bond dipoles are sensitive to a billionth change in position (Price Dwek et al.) and can make a significant (-2kJ/mol) difference. This makes the enzyme and what it's holding more stable and have the right position, without a measurable temperature rise.

Other examples include
Nerve impulses
Voltage gated channels
Mitochondria inner membrane potential for ATP production

Low power, low frequency magnetic fields can affect:
moving electrons and ions,
and other magnetic charges

Examples include:

:Sodium and potassium ions in nerves
:Calcium ions in nerves and muscles
:Ions moving in blood and body fluids.
:Influencing the magnetic charges in Hemes:
in Hemoglobin in blood,
in P450 detox enzymes,
in Cytochrome C oxidase in mitochondria energy production
and in NOS enzymes for
maintaining circulation,
brain function
and immune control.

b)
Oxygenated blood is usually not magnetic but unoxygenated blood is.

Oxygenated hemoglobin (Fe2+.O2.Hb) repels a magnetic field (diamagnetic)
Un-oxygenated hemoglobin (Fe2+.Hb) attracts a magnetic field (paramagnetic)
Luckily it is shielded by the membrane of the red blood cell.

Similarly for myoglobin in the muscle cells.

Cytochrome C Oxidase in Complex IV in the mitochondria electron transport chain, when oxygenated is diamagnetic.

NOS when oxygenated is also diamagnetic so repels a magnetic field.

Otherwise, they are paramagnetic and attract magnetic fields.

So basically anything that reduces the amount of oxygen in the blood makes the blood, mitochondria and NOS more magnetic so more susceptible to external magnetic fields.
Many things can reduce the amount of oxygen and they all add up.

Methemoglobin (Fe3+.Hb) is also usually paramagnetic. Oxidative stress can cause it.

Cell Free Heme (eg Fe4+.Hb) is not inside the red blood cell so can be very attractive to magnetic fields. Advanced Glycation End-products from hyperglycemia can cause this.

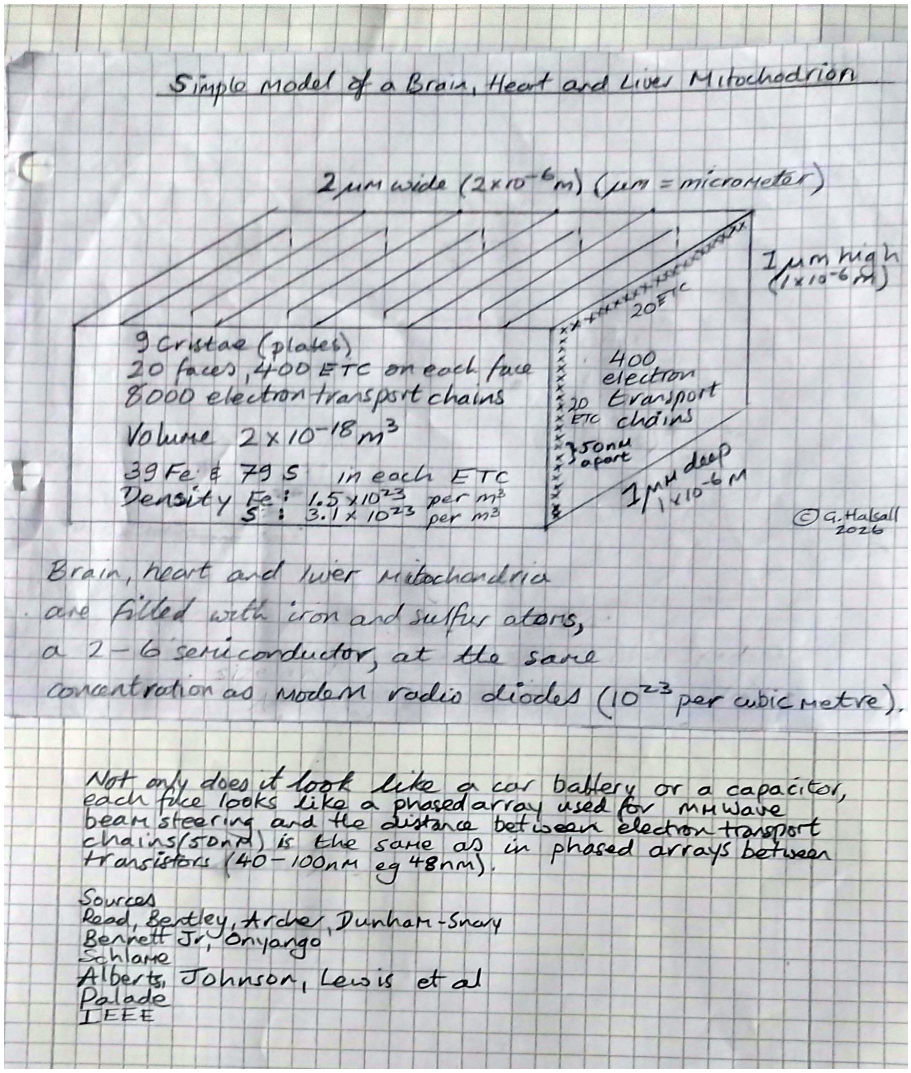
P450s, the phase 1 detox family of enzymes, contain a heme which is always paramagnetic especially while detoxing.

Interestingly, myoglobin in the muscles is able to produce nitric oxide from nitrite, which is another reason why movement helps, as it makes nitric oxide which increases oxygen delivery for the rest of the body.

Section 2c see below

c)
Mitochondria contain iron and sulphur atoms at the same concentration as the doping in rectifying diodes.

Brain, heart and liver mitochondria are filled with iron and sulfur atoms, a two-six semiconductor, at the same concentration as modern radio diodes, 1E23/m3. They are also about the same size as junction diodes.



The iron and sulfur atoms are embedded in a carbon hydrogen matrix, the membrane, similar to the silicon hydrogen matrix of amorphous silicon in flexible solar cells. Carbon and silicon are both in group 4 of the periodic table.

Not only does it look like a car battery or a capacitor, each face looks like a phased-array used in modern active phased-arrays for millimeter wave beam steering.
The average distance between electron transport chains (50nm) is the same as in phased-arrays between transistors (40-100nm eg 48nm).

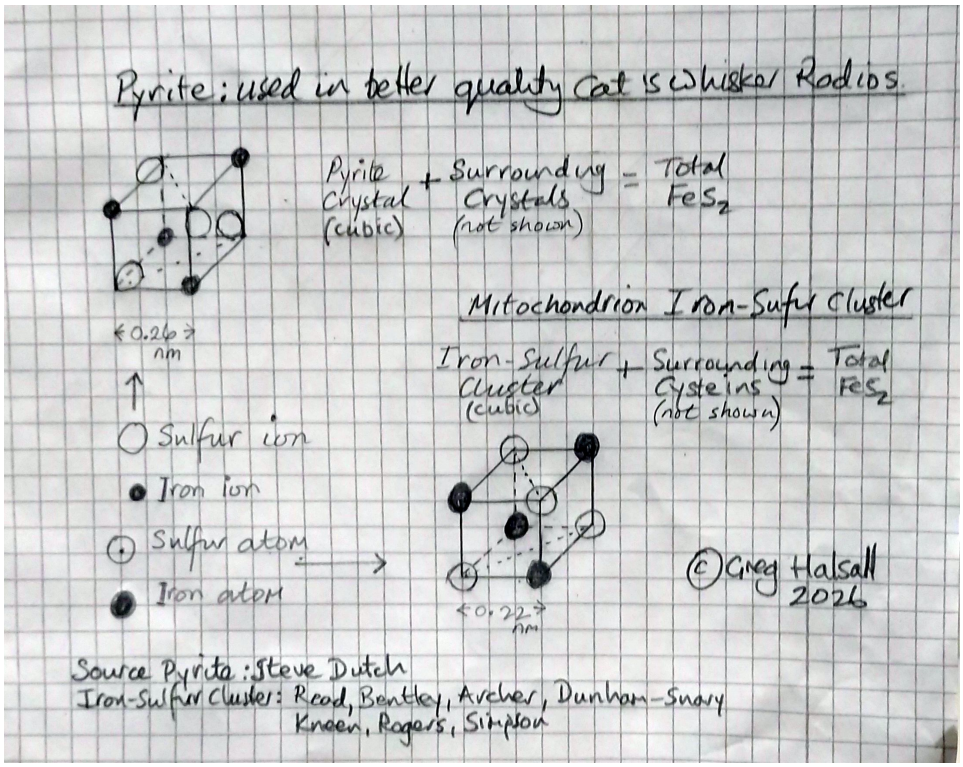
I would not be surprised to find fractal antenna patterns in some of the mitochondria.

But where is the charge separation?
It is in the electron transport chain in the mitochondria as shown in (d) below.

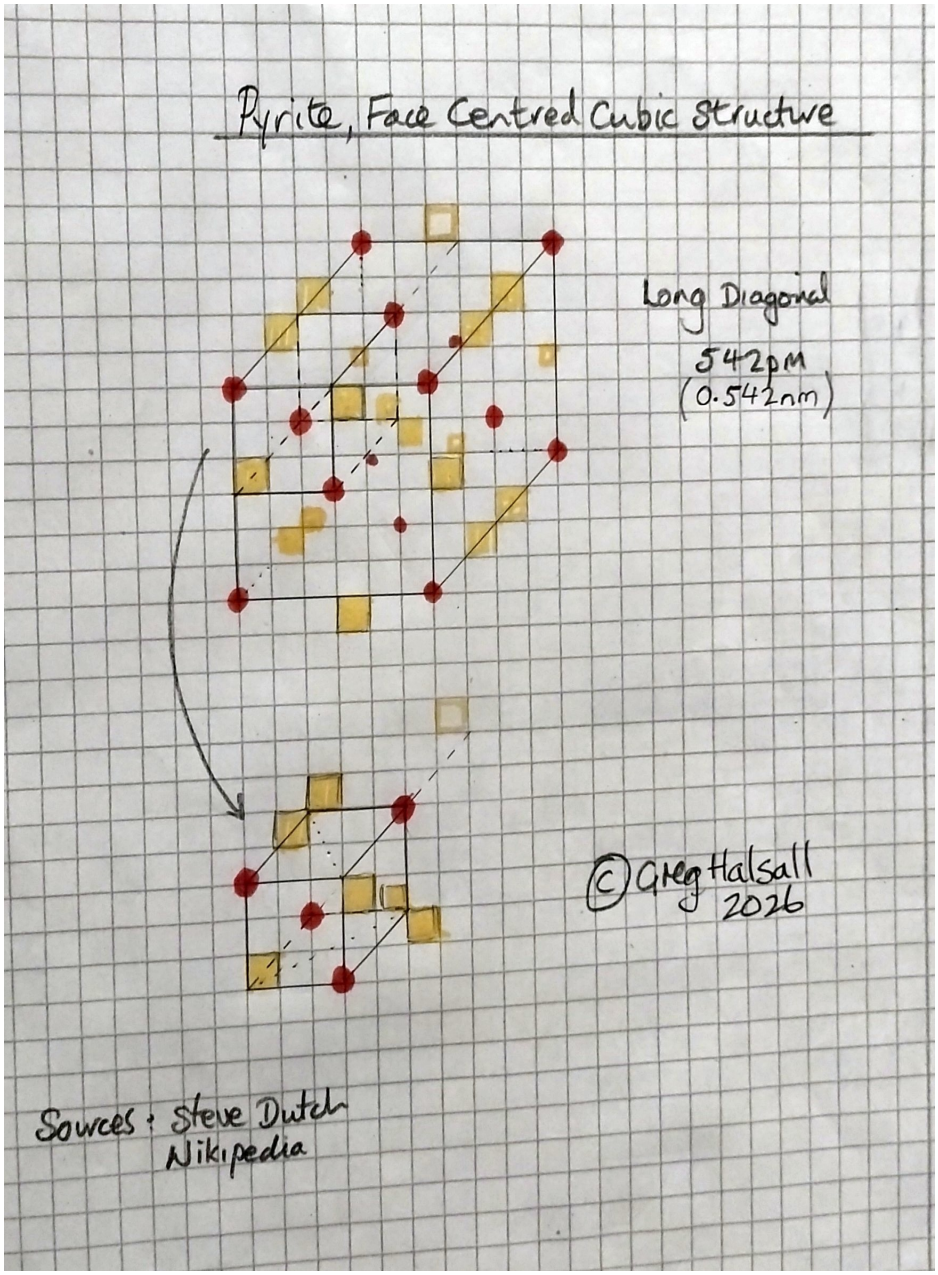
d)
Iron sulphur clusters in the electron transport chain have exactly the same size, shape and

structure as Iron-Pyrite crystals in Cat's Whisker Radios.

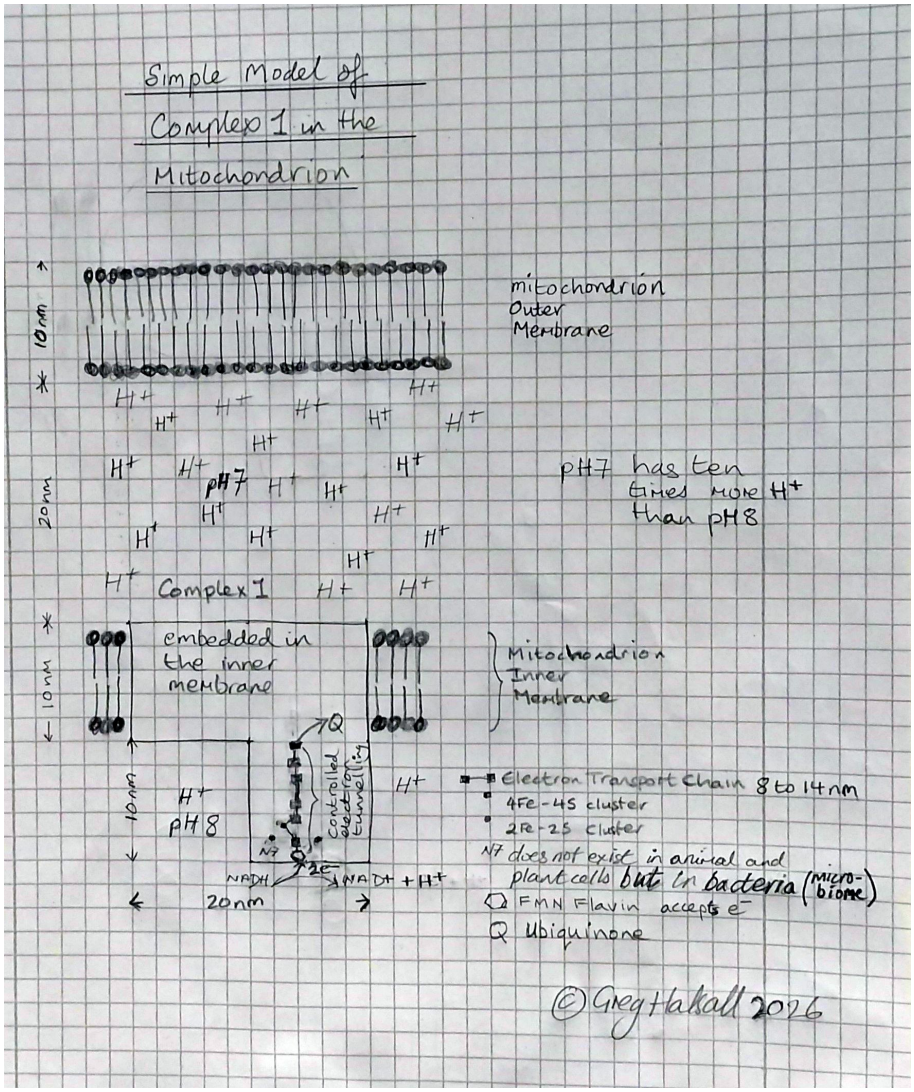
And they are made of the same material, iron and sulphur.



Pyrite Face Centre Cubic Structure see below



The iron sulphur clusters are in the mitochondria in the electron transport chain mostly in Complex I see below.



Does the fact that iron-pyrite crystals contain ions, and iron-sulphur clusters contain atoms make a significant difference?
Because both iron-pyrite crystals and the iron-sulfur clusters use tunneling for moving the electron it seems unlikely. The distances between the iron sulphur clusters, in complex I, are ideal for electron tunneling instead of normal electron transfer reactions.

The electron transport chain in complexI looks like a PIN diode used in radio for low and high frequencies and pulse modulation.
Its length at 10nm is nearly the same as the gate to gate pitch (distance) in modern phased-arrays for millimetre wave beam steering of 48nm.

A logical consequence of these facts is that Homo Sapiens have been developing high-power radio for about 200 years, but mitochondria evolving low power radio for about two billion years and bacteria for about three and a half billion years. Therefore we are jamming the signal. It's not just for people. It's for animals, plants, bacteria, all life.

Has life been using it? We find it useful I imagine they do too. Catalase an enzyme found in many parts of the body including the mouth, liver and blood, operates at a frequency between 20 and 40 megahertz so enzymes are certainly fast enough to drive them.

e)
High Band 5G=Millimeter waves (5E-23 Joule) are only two times below the energy level of molecular rotation (1E-22 Joule) and their absorption rate is 10 times that of 2.4GHz WiFi.

The body absorbs 10 times more energy at hi-band 5G than at 2.4 GHz.

The top 12 absorbers are:

Extra-cellular fluids
The Eye (most of)
Stomach
Gall bladder
Prostate
Testis
Thyroid
Breast glands
Pituitary Gland
Pancreas
Placenta
Blood

So even if it doesn't get through the skull it disregulates:
the hormone system,
the digestive system,
the detox system,
the reproductive systems
and the immune system.

Also hi-band 5G (=mmWave) (5E-23J) is only 2 times below the energy of molecular rotation (1E-22J) so directly and easily affects large molecules, eg enzymes and DNA.

And let's not forget our skin and mucous membranes are the home of the IgA, IgE and mast cell immune defence so hi-band 5G disregulates them too.

May I suggest that stopping the mandatory measurement and limits of SAR (Specific Absorbtion Rate) at 6GHz was a mistake for public health.

Section 3) Why me?

I was always sensitive to everything.
I suspect it's because I had serious stomach problems when I was a baby and since then I have never digested my food properly.

For me and my family, it's not what or why is it happening? But how can we increase my resilience to recover some of my abilities?
But I'm not worried for myself. I'm more concerned about my children.

If we want children to learn, and fulfill their potential we have to turn it off.
If we want adults to reach and recover from their real maximum you have to turn it off.

We live in an ageing society, and if we want people to still be productive in their 50s and 60s, we have to turn this off.
If we want to empty the hospitals, we have to turn it off.
If we want to reduce dementia we have to turn it off.
If we want good customer service, we have to stop the excitotoxicity.
If we want a more friendly society, we have to remove the chronic oxidative stress.

Greg Halsall

(c) Greg Halsall 2026
All rights reserved.