

<http://www.emrrfsa.org/>

While not widely publicized, in May 2011, the cancer research arm of the World Health Organization, the International Agency for Research on Cancer, classified radiofrequency EMF — such as the radiation from cellphones — a class 2B carcinogen, meaning it is possibly carcinogenic to humans.¹²

Again, the damage is not done through heat or ionizing radiation; it's done by activating your VGCCs, thereby triggering a chain-reaction that produces excessive amounts of ROS, peroxy nitrates and hydroxyl free radicals — the most destructive free radicals known to man, as well as through excessive calcium signaling.

<https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

Practical Strategies to Limit Your Exposure

Naturally, to reduce your risk of harm, you need to [reduce your exposure to EMFs](#). Cellphone towers should be a major concern if you work or go to school within 300 meters (about 1,000 feet) of one. Even just driving around can expose you to substantial cellphone tower radiation.

Cell Tower: cause Dirty Electricity and Harmful Non-Thermal Human Damage.

The highest measured dirty electricity is near cell phone towers.

Cell towers operate on Direct Current (DC), and run off Alternating Current (AC). A switching device is required to convert AC to DC. Switching devices causes high voltage transients, adding extra waves on the AC sine wave that increases amplitude strength, size, distance of the Electro-Magnetic Field (EMF) as well as a shaking of the electric and magnetic field around the cables, wires and in all connected equipment. These shaking fields cause distortion, disruption, and irritation to living things: plants, animals, and humans.

Cell towers, cell extenders inside the home, "Smart" Meters, microwave in your kitchen does not shield all microwaves from escaping, cordless phones, wireless networks and devices, Bluetooth devices, cell phones, dimming switches, low voltage converters like 12v halogen for outdoor lights or indoor lighting, variable speed motors like fans in computers, laptops, HVAC systems, etc. all produce shaking of the electric/magnetic fields. Any large motor will cause similar high voltage transients that travel long distances, sometimes miles down electrical wires. All wifi emitting devices like Baby Monitors, wifi doorbells, wifi security, smart fridges and laundry machines etc., smart home wifi connected lighting HVAC, fans, windows, security, thermostats, Even ultrasound devices especially on the fetus mothers belly. Have these been tested for electro magnetic fields for example? Not to mention ultrasound shakes violently cellular structure and who knows what affects on cell function and communication.

Removing dirty electricity from a school caused a dairy farm ¼ mile away to increase milk production from grounded electrical signal being cleaned up. Samuel Milham MD, MPH "Dirty Electricity"

Human health effects:

Excessive free radicals triggered by low-frequency microwave exposure from cellphones and Wi-Fi networks have been linked to chronic diseases such as cardiac arrhythmias, anxiety, depression, autism, Alzheimer's, childhood asthma, diabetes, and infertility to name a few. ALS (Lou Gehrigs Disease) as noted later by bone marrow cell differentiation sensitivity to Microwaves.

Children Development:

During growth phases, additional calcium needed, note the loss of calcium due to EMF causing calcium to leave the blood and enter cells. Calcium used for nerve signaling, muscle signaling, many enzymatic reactions, as well as holding the fibrin polymer together to form a clot. Calcium is classified as a metal? Too little can cause kidney stones. Production of lymphatic fluids. Primary hypomagnesemia (lack of magnesium), so if not enough magnesium in blood, calcium will probably over react causing major problems. Phosphorus, magnesium, Vitamin D, Kidneys, parathyroid hormone help to regulate calcium in the blood.

NERVOUS SYSTEM

The highest density of Voltage Gated Calcium Channels (VGCCs) are found in your nervous system and, indeed, studies dating back to the 1950s and '60s show the nervous system is the organ that is most sensitive to EMFs.. Some of these studies show massive changes in the structure of neurons, including cell death and synaptic dysfunction. When the VGCCs are activated in the brain they release neurotransmitters and neuroendocrine hormones. Hence, consequences of chronic EMF exposure to the brain include the following, which Pall details in a 2016 paper:⁵

- [Anxiety](#)
- [Depression](#)
- [Autism](#)
- [Alzheimer's](#)

In animals exposed to EMFs, there are massive, cumulative effects in the brain. Genetic polymorphism studies also show that elevated VGCC activity in certain parts of the brain produces a variety of neuropsychiatric effects.

<https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

DNA:

1. Microwaves of sufficient strength destroy, split DNA strands thereby placing unknown protein fragments inside cells.

MITOCHONDRIA:

1. Exposure to microwave EMFs, like cellphones, causes massive mitochondrial dysfunction due to damage done by free radicals from peroxynitrite that also cause single and double stranded breaks in your DNA (Dr. Mercola)
2. Hydroxyl free radicals decimate mitochondrial and nuclear DNA, their membranes and proteins. Too much calcium in the mitochondria can also impact their function. The end result is mitochondrial dysfunction, which we now know is at the heart of most chronic disease. Since your brain, the pacemaker in your heart and male testes have the highest densities of VGCCs, these areas are the most prone to damage when exposed to EMFs.
 - a. <https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

CELLS:

1. *26 research papers show that EMFs work by activating what are called voltage-gated calcium channels (VGCCs). These are channels in the outer membrane of the cell, the plasma membrane that surrounds all our cells. When they're activated, they open up and allow calcium to flow into the cell. It's the excess calcium in the cell which is responsible for many of the biological effects of EMFs [Martin Pall, Ph.D.] When your VGCCs are exposed to [EMFs](#), they open up, allowing abnormally large volumes of calcium ions into the cells — about 1 million ions per second per channel. Each VGCC has a voltage sensor, a structure that detects electrical changes across the plasma membrane and opens the channel. EMFs work through the voltage sensor to activate the channel and radically increase intracellular levels into dangerous ranges.*
2. *Calcium is highly regulated by the Parathyroid and Thyroid glands in a very tight range that must be maintained or the systems in the body get out of synchronization. So excess absorption of calcium by the cells not only harms the cells but stresses the parathyroid and thyroid to retrieve calcium from bones/teeth etc. to replace the lost calcium. They burn out, the calcium reserves deplete, and the inner cell breaks down with excess of charged calcium ions. Not to mention an excess of phosphate (calcium phosphate makes up bones, remove calcium you must pee out the phosphate). Often causing an attempt at balance by sugar ions!!! Calcium Cation is the free floating blood ion Ca^{+2} that affects blood coagulation! Strongly affect nerves and muscles*

(muscles twitches and ticks a sign of imbalance in Ca^{+2}) Note Smartmeter causes red blood cell clumping as a step 1 problem. Clot = Fibrin Polymer, note high fibrin in blood another sign)

3.

STEM CELLS:

1. Cell Microwaves confuse Bone marrow stem cell differentiation (turning into either bone, muscle, or red blood cell)

BLOOD:

1. Microwaves affect red blood cell shape in increasing distress, from clumping, to jagged points, to bursting as shown by blood tests of people standing next to Smart Meters illustrate.
2. Dirty Electricity: increases blood sugar and enhances diabetic's insulin resistance (Magda Havis)
- 3.

THYROID:

- 1.

BRAIN AND BRAIN DEVELOPMENT:

1. Since your brain, the pacemaker in your heart and male testes have the highest densities of VGCCs, these areas are the most prone to damage when exposed to EMFs.
 - a. <https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>
2. Neuro Transmitters found to be depressed in those living near cell towers: test Urinary Dopamine and Phenylethylamine (PEA). [Buckner and Eger 2011, Eskander et al, 2011]
3. Memory: memory recall is disrupted causing memory loss especially from short term to long term handoffs.
4. Disrupts learning: dendritic expansion entrainment, nerve ends called dendrites expand seeking connection and new directions during learning. Microwaves distort the natural reaching of the dendrites and can change their direction and line them according to a stronger electro magnetic field like a cell phone to the head generates.
5. Microwaves and EMFs cause Inflammation of the Brain, both thermal and non-thermally.
6. Increases blood brain permeability allowing toxins to gain entry to the brain
7. Induces fight or flight response in the Hypothalamus
8. [Brain cancer](#) is another possibility from extended cellphone use if you keep the phone to your ear. That said, emphasizing the cancer risk is likely counterproductive, as most people use cellphones and those who develop brain cancer are few and far in between. The problem is brain cancer has a latency period of a decade or more. Arrhythmias, autism, anxiety and Alzheimer's, on the other hand, are extremely prevalent these days, and we now have a mechanism that explains how EMF contributes to all of them.

- a. <https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

CEREBRAL FLUID

BREAST:

Women who carry their [cellphones in their bra](#), for example, risk cancer in the upper inner quadrant of the breast, which is very atypical and not the usual upper outer quadrant.

HEART:

1. Since your brain, the pacemaker in your heart and male testes have the highest densities of VGCCs, these areas are the most prone to damage when exposed to EMFs.
 - a. <https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

Cardiac Effects

Your heart is also very sensitive to EMFs, particularly the pacemaker cells of your heart, as they have the highest density of VGCCs. As a consequence of this, we find that EMFs tend to trigger the following conditions. If you have any of these conditions (or any of the ones discussed above and below), you need to know that EMF exposure is a major contributing factor and take immediate and aggressive steps to remediate your exposure.

- Cardiac arrhythmias (associated with sudden cardiac death)
- Atrial fibrillation / atrial flutter
- Premature atrial contractions (PACs) and premature ventricular contractions (PVCs), also known as heart palpitations
- Tachycardia (fast heartbeat) and brachycardia (slow heartbeat)

<https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

PROSTRATE:

FERTILITY AND Reproductive Effects

1. Since your brain, the pacemaker in your heart and male testes have the highest densities of VGCCs, these areas are the most prone to damage when exposed to EMFs.
 - a. <https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

A third area with densely populated VGCCs is the reproductive system, particularly the male testes. A consequence here is impaired or reduced fertility. There is evidence showing EMFs can cause both male and female infertility, but male infertility has been more studied. Pall describes a classic reproduction experiment published 19 years ago by Ioannis Magras and Thomas Xenos in Greece:

"They took young pairs of mice, one male and female. They put them in a little cage on the ground outside in an antenna park ... The [radiation] levels at the ground were well within our current safety guidelines ... They put them in two different locations, one with a higher level of exposure and one with a lower level of exposure.

What they found was that at the higher-level exposure, each pair produced one litter that was approximately normal sized, then a second litter that was clearly down in numbers and then complete infertility — not a single mouse born ...

At lower level exposure, it was basically the same story, except it took twice as long. They produced four litters with decreasing numbers, and then complete infertility. We have now, in humans in many countries around the world, decreased male sperm count — down by over 50 percent in Western countries, and about half of that amount in other countries around the world.

The senior author in that paper is saying, 'If this keeps going, we're going to become extinct,' just from the drop in male sperm count. We know that that occurs in humans — in people who carry their cellphones in their front pockets, men who use their laptops with the Wi-Fi on sitting on their lap. We know that occurs. But of course, industry denies everything."

Indeed, studies have linked low-level electromagnetic radiation (EMR) exposure from cellphones to an 8 percent reduction in sperm motility and a 9 percent reduction in sperm viability.^{8,9} Wi-Fi equipped laptop computers have also been linked to decreased sperm motility and an increase in sperm DNA fragmentation after just four hours of use.¹⁰

<https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

I personally believe EMF exposure may be one of the most significant factors for the observed decrease in male sperm count, and the increased prevalence of anxiety, depression, autism and Alzheimer's. It is also highly likely a contributing factor to cancer.

PANCREAS

LIVER

GALL BLADDER

VITAMIN DEFICIENCIES:

"It is clear that when you're deficient in magnesium, you get excessive activity of the VGCCs. You also get excessive calcium influx through the N-methyl-D-aspartate receptor, caused by magnesium deficiency, which is also problematic, so it's important to allay that deficiency.

<https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>

CANCERS:

Shown in court to have caused brain cancer

Breast cancer

Lymphatic cancer

Hip cancers

Pancreatic cancer

Kidney cancer

Thyroid cancer and malignant melanoma are the fastest growing cancers in western developed countries and most likely related to increased EMF exposure.

EMFs and Cancer

Studies on cancer have also been blocked by the industry in a number of ways, including preventing researchers from obtaining real-world data on cellphone usage. Obviously, people who use their cellphones the most are at greatest risk. While not at the top of the list of concerns associated with EMF exposure, cancer is yet another potential consequence of mitochondrial damage.

What Is More Dangerous, Cellphones or X-Rays?

If you are like most, the answer is obvious: X-rays. That is because you have been convinced by the deceptive lies of the telecommunications industry that have lobbied the government to reinforce this delusional myth. The reality is that there is compelling evidence showing cellphones are more dangerous than X-rays — by several orders of magnitude.

Some of the best evidence comes from a German study (headed by professor Franz Adlkofer), in which the effects of ionizing radiation equivalent to 1,600 chest X-rays were compared to 24 hours on a cellphone. Surprisingly, they found both produced roughly equivalent amounts of DNA breaks in in-vitro assays. According to Pall, this actually vastly underestimates the effects of cellphones, because they used a continuous wave EMF, not pulsed.

There's extensive evidence showing pulsed EMFs are far more damaging than continuous wave EMFs. That's important for a number of reasons, including the fact that all wireless communication devices communicate by pulsations. In another paper, the group showed that when you use pulsations designed to be similar to the pulsation from a real cellphone, damage occurred at far lower intensities.

"This raises the question, 'How can this possibly happen?' I think the answer comes from the kind of diagram I've published, which is how EMFs produce free radicals," Pall says. "Both ionizing radiation and the microwave frequency EMFs produce DNA damage through free radicals. They're similar in that way. Where you get the free radicals is through the peroxynitrate pathway.

It turns out that when you go from EMFs to the free radicals on that pathway, there are three steps that involve high levels of amplification. One of them is when you open up the channels, you get about a million calcium ions flowing in per second. The second is that you get increases in NO and superoxide.

Those, in effect, will be the calcium acting catalytically, because once it's in the cell, as long as it's elevated, you keep getting more and more [NO and superoxide]. And then those two react with each other to form peroxynitrite. The reaction rates are the product of the two concentrations. So you have three levels of amplification. If you have three levels of amplification, you get a hell of a response to a very small stressor."

Ionizing Radiation and DNA Breaks

The industry says there's not enough energy in microwave radiation to cause direct damage to covalent bonds in DNA. This is true. There isn't. It's the biological amplification resulting in excessive oxidative stress that causes the damage. Interestingly, even most of the damage caused by ionizing radiation is actually due to secondary free radical formation that breaks DNA. It's not directly from the energy within the radiation. Pall explains:

"That was published by Arthur Compton. He got the Nobel Prize for it in 1927. The way in which ionizing radiation works, it basically gets molecules and atoms and knocks electrons out, and then you get pairs of free radicals generated. That's called Compton scattering.

There is amplification from ionizing radiation, but it's only at one level. One energetic photon can produce a chain of free radicals. You've got three levels of amplification with the microwave frequency EMFs. The amount of damage you get based on those studies is truly extraordinary. Of course, Adlkofer and [Pilger] Rudinger were severely attacked by the industry."

CELL TOWERS AND CANCER CLUSTERS (childhood leukemia)

San Francisco Twin Peaks Mega Tower

San Diego University of California (SDSU) cell tower cancer cluster

Germany village Church Tower cancel cluster

Fallon, Nevada

There are 6 or more studies that show ground based antennae at various frequencies causing childhood leukemia. Loren C antennae is suspect in this case at Top Gun Naval Airstation near the town as well as a town in near cape cod. High frequency military antennae in Hawaii, Guam, and Scotland are associated with cancer clusters as well as several more around broadcasting antennae. [Samual Milham, Dirty Electricity, 2010]

Polycythimia (PCV) possibly caused by dirty electricity.

Radar guns for police cause testicular cancer at least 7x more than others.

Cell Tower as contributor to School Dirty Electricity

School Vista Del Monte Elementary School

Dirty Electricity causing cancer

La Qunita Middle School CA Teacher Cancer Cluster (2008)

in book "Dirty Electricity", Samuel Milham 2010

Dirty electricity raises blood glucose levels causing a Type 2 Diabetes

Affects of Microwaves On Adults vs. Children

Note quite correct, misleading in fact, but a starting point: (from LiveStrong already a not reliable site)

The Role of PTH and Vitamin D

The body must maintain certain levels of calcium and phosphorus in the blood. Parathyroid hormone, or PTH, and vitamin D work to keep these levels in balance. Calcium and phosphorus are absorbed into the blood through the small intestine after eating foods that contain these nutrients. The bones will also release the nutrients to help maintain necessary blood levels. The parathyroid gland can sense an imbalance of calcium or phosphorus. If the calcium level is low, the parathyroid gland will release PTH, which tells the kidneys to produce more active vitamin D. This helps the body to absorb more dietary calcium and phosphorus through the intestine, tells the bone to release calcium and phosphorus into the blood and tells the kidneys to excrete more phosphorus in the urine.

Calcium, Phosphorus and the Kidneys

Healthy kidneys will eliminate excess phosphorus and calcium in the blood. If kidney function is impaired, the body will not be able to get rid of extra phosphorus. High phosphorus levels stimulate the release of parathyroid hormone, which can cause complications when the normal mechanism for bone mineral management does not work correctly. A high phosphorus level may also result in a low calcium level. Calcium binds with phosphate and is deposited in the tissue. A buildup of these deposits causes calcification in the tissue, which can disrupt normal organ function. People with chronic kidney disease should work closely with their dietitian and doctor to control phosphorus, calcium and parathyroid levels.

Bone Health

About 85 percent of the body's phosphorus and 99 percent of calcium are found in the bones. People with impaired kidney function are at greater risk for bone disease because they are more likely to have high phosphorus and PTH levels, which can lead to progressive bone loss. According to the Linus Pauling Institute, there is increasing concern for the effect of a high intake of phosphorus even in healthy individuals due to its possible impact on bone health. Excessive consumption of foods with phosphorus additives and a low calcium intake seem to be especially harmful.

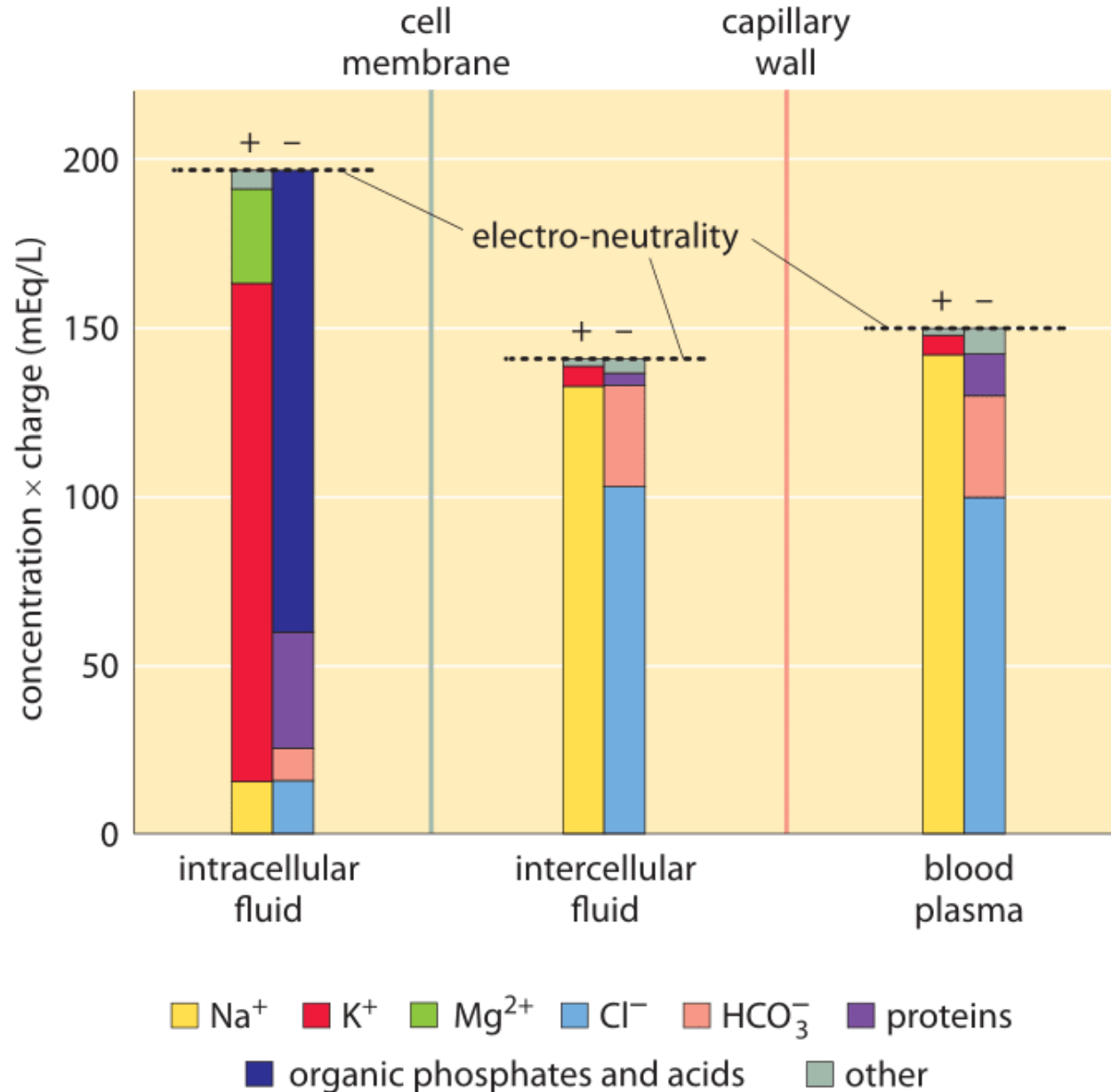
Calcium and Phosphorus in Food

Calcium and phosphorus levels are controlled in part through dietary intake. The Food and Nutrition Board set the recommended dietary allowance of phosphorus at 700 milligrams daily. Sources of phosphorus include dairy products, meat, nuts, beans and foods that contain phosphorus additives such as convenience foods and colas. The RDA for calcium is 1,000 milligrams for most adults, though adolescents and older adults need more calcium. Sources of calcium include dairy products, soy, vegetables such as bok choy, broccoli and kale and beans such as pinto and red.

role of ions in electrical communication (Na^+ , K^+ , Ca^{2+}), as cofactors in dictating protein function with entire classes of metalloproteins (constituting by some estimates at least $\frac{1}{4}$ of all proteins) in processes ranging from photosynthesis to human respiration (Mn^{2+} , Mg^{2+} , Fe^{2+}), as a stimulus for signaling and muscle action (Ca^{2+}), and as the basis for setting up transmembrane potentials that are then used to

power key processes such as ATP synthesis (H^+ , Na^+). So high potassium (K^+) inside the cell, high Na^+ outside the cell. Start pumping Ca^{2+} into the cell and you mess up the neutral electric state, what is the reaction of the cell to Ca^{2+} inside? How does the cell respond to excess positive charge?

<http://book.bionumbers.org/what-are-the-concentrations-of-different-ions-in-cells/>



SOLUTIONS:

Utility has always been willing to come and measure magnetic field surveys to insure home owners safety and will come out to survey for you. They should now also test for dirty electricity from their powerlines.

TESTING

Use of portable AM radio will show more static on an off station as EMF pollutes the long sine wave of AM radio. Near really high dirty electricity environments, you won't be able to tune to any AM station.

Children absorb more radiation than adults



Courtesy Om P. Gandhi and Green America