TRIALS AND TRENDS IN CARING FOR PATIENTS WITH

ELECTROMAGNETIC HYPERSENSITIVITY

AT ONTARIO'S

ENVIRONMENTAL HEALTH CLINIC

WSF MONTREAL, AUGUST 13TH, 2016

Dr. Riina I. Bray BASc MSc MD FCFP MHSc

Medical Director, Women's College Hospital, Environmental Health Clinic

Assistant professor, Department of Family and Community Medicine and Dalla Lana School of Public Health, University of Toronto.

Environmental Health Clinic

The Environmental Health Clinic is a unique multidisciplinary clinic, and the only one of its kind in Ontario. It was established in 1996 by the Ministry of Health and Long-Term Care to be a provincial resource in promoting environmental health, and to improve health care for people with environment-linked conditions such as chronic fatigue syndrome, fibromyalgia and environmental sensitivities (CMI – Chronic Multisystem Illnesses).

The Environmental Health Clinic is a program run through Women's College Hospital and the Faculty of Medicine, University of Toronto.

BACKGROUND

- Patient demographics – mean age approximately 50 years old and 80% are women. Women seem to be statistically more sensitive to EMF than men, as they are to chemicals.
- Gaps in knowledge and understanding in the medical community and the general public about how this technology works and the health impacts.
- Large gaps in research in this area, especially in North America.

DEFINITION OF ELECTROMAGNETIC HYPERSENSITIVITY

- "Awareness and/or adverse symptomatology in response to electromagnetic fields (EMF) of multiple types"

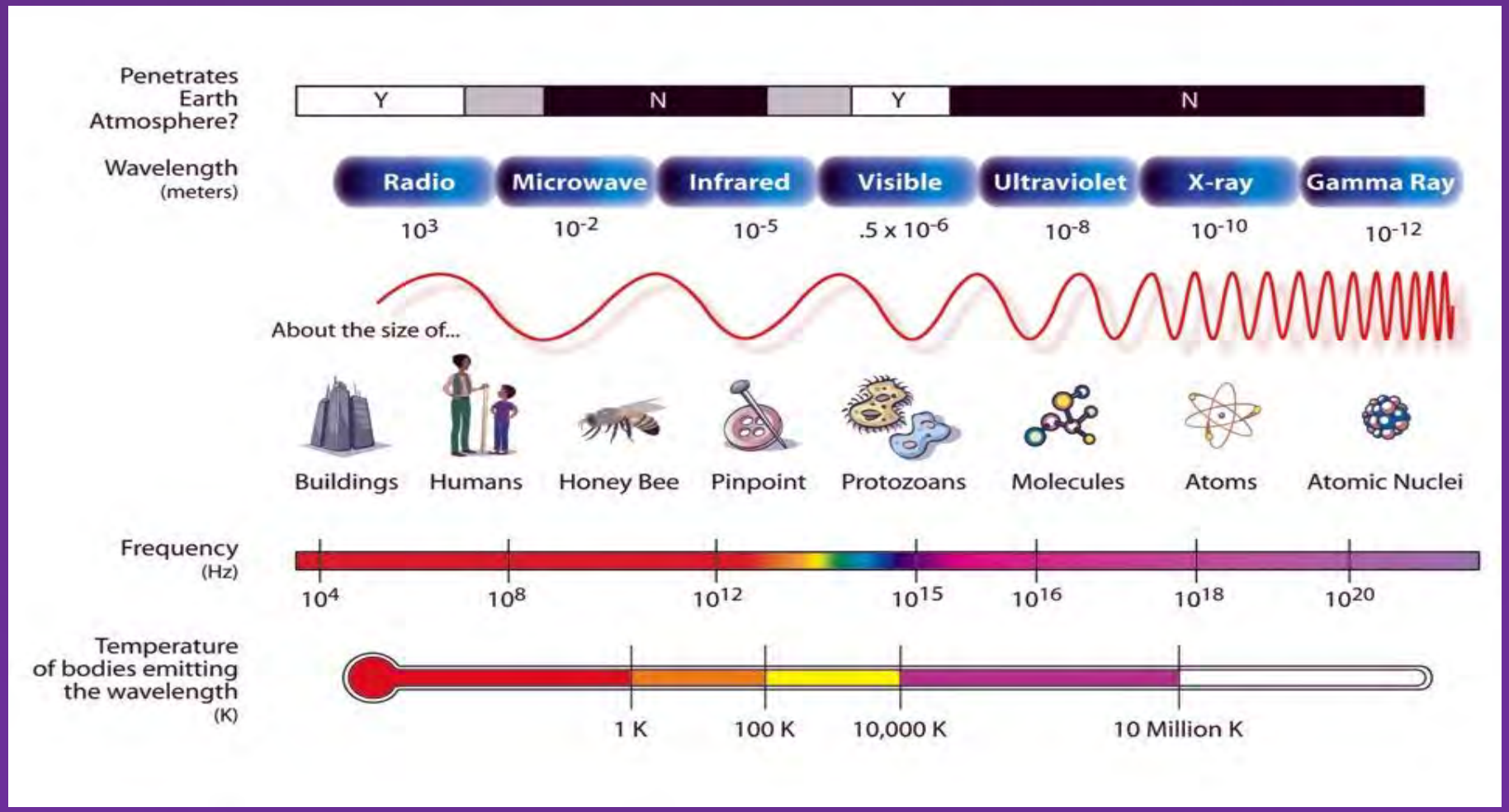
-Dr. Mallery-Blythe

ELECTROMAGNETIC HYPERSENSITIVITY

It is a **spectrum disorder (many degrees of severity)** which follows the same criteria as that of Multiple Chemical Sensitivities.

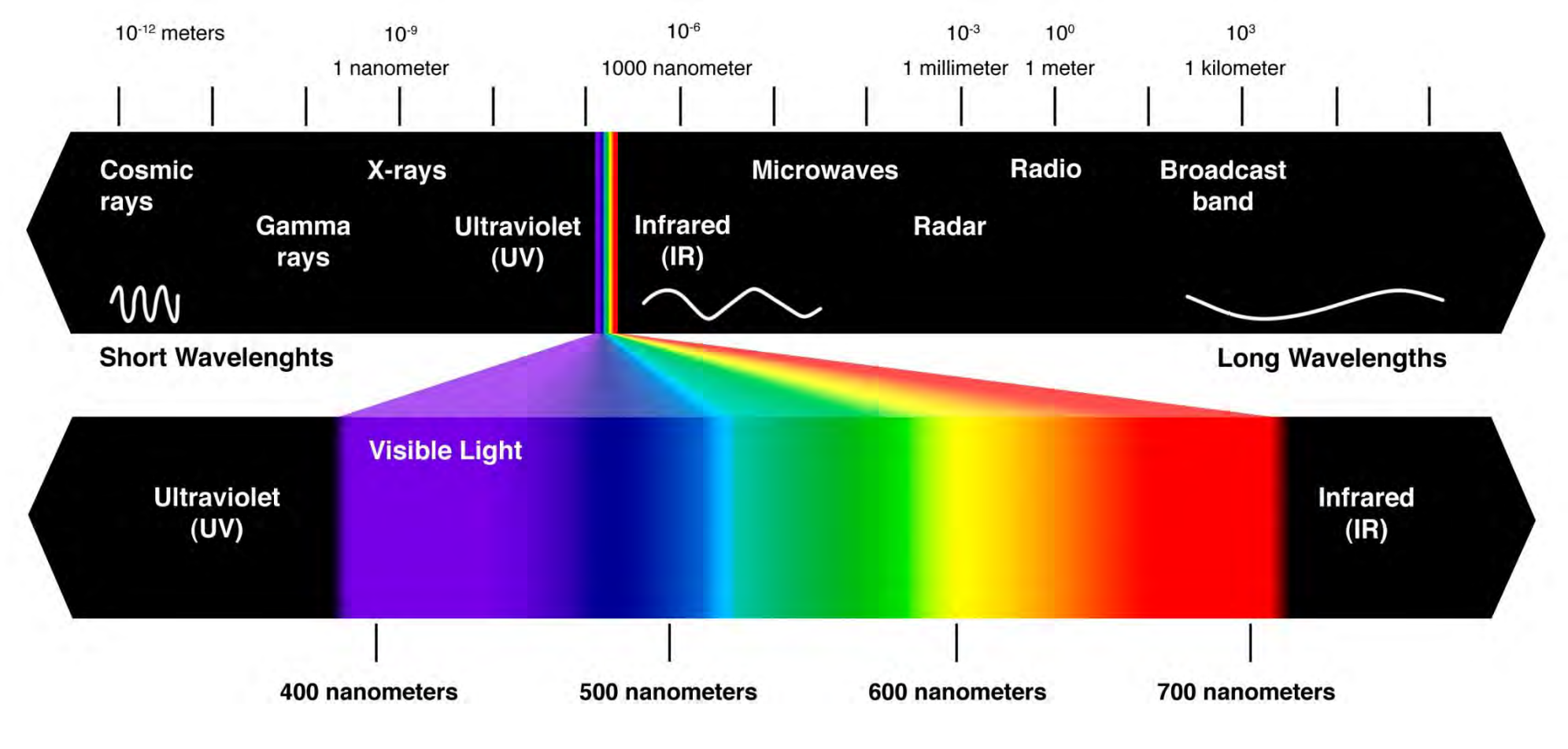
Whereas genetic polymorphisms and total body burden are responsible for MCS, EHS is the same except that there is ample evidence in the literature that all cells and physiological systems in the body are affected

THE ELECTROMAGNETIC SPECTRUM (EMS)



http://www.ilibrarian.net/science/electromagnetic_spectrum.jpg

VISIBLE LIGHT IS A SMALL PORTION OF THE EMS



https://rrstringer.files.wordpress.com/2014/02/visible-light-spectrum.jpg

SOURCES OF ELECTROMAGNETIC RADIATION (EMR) AND ELECTROMAGNETIC FIELDS

- WiFi
- Power Lines
- Radio Antennas
- DECT cordless phone base stations
- Cell phones (signal is 6-20 x stronger than laptop).
- Wifi routers
- Cell phone towers <500m away
- Lap tops
- Florescent lighting/ CFL
- I pads
- Microwave ovens that leak (<u>all do</u>)

- Cosmic background radiation

DEFINITIONS:

- **Ionizing Radiation** - does carry enough energy per quantum to ionize atoms or molecules—that is, to completely remove an electron from an atom or molecule.
- **Non-ionizing Radiation** – does not carry enough energy per quantum to ionize atoms or molecules—that is, to completely remove an electron from an atom or molecule.
- **Background of RF radiation of our ancestors** - 0.000001 μWatts/m^2. We are now exposed to 100 million million times higher EM radiation than our grandparents were.

Frequency Range (Hz)*	Classification	Biological Effect
0	Direct current	Nonionizing
0-300	Extremely low frequency	Nonionizing
$300\text{-}10^4$	Low frequency	Nonionizing
$10^4\text{-}10^9$	Radio frequency	Nonionizing
$10^9\text{-}10^{12}$	Microwave and radar bands	Nonionizing
$10^{12}\text{-}4 \times 10^{14}$	Infrared band	Nonionizing
$4 \times 10^{14}\text{-}7 \times 10^{14}$	Visible light	Weakly ionizing
$7 \times 10^{14}\text{-}10^{18}$	Ultraviolet band	Weakly ionizing
$10^{18}\text{-}10^{20}$	X-ray films	Strongly ionizing
Over 10^{20}	Gamma rays	Strongly ionizing

*Division of the electromagnetic spectrum into frequency bands is based on conventional but arbitrary usage in various disciplines.

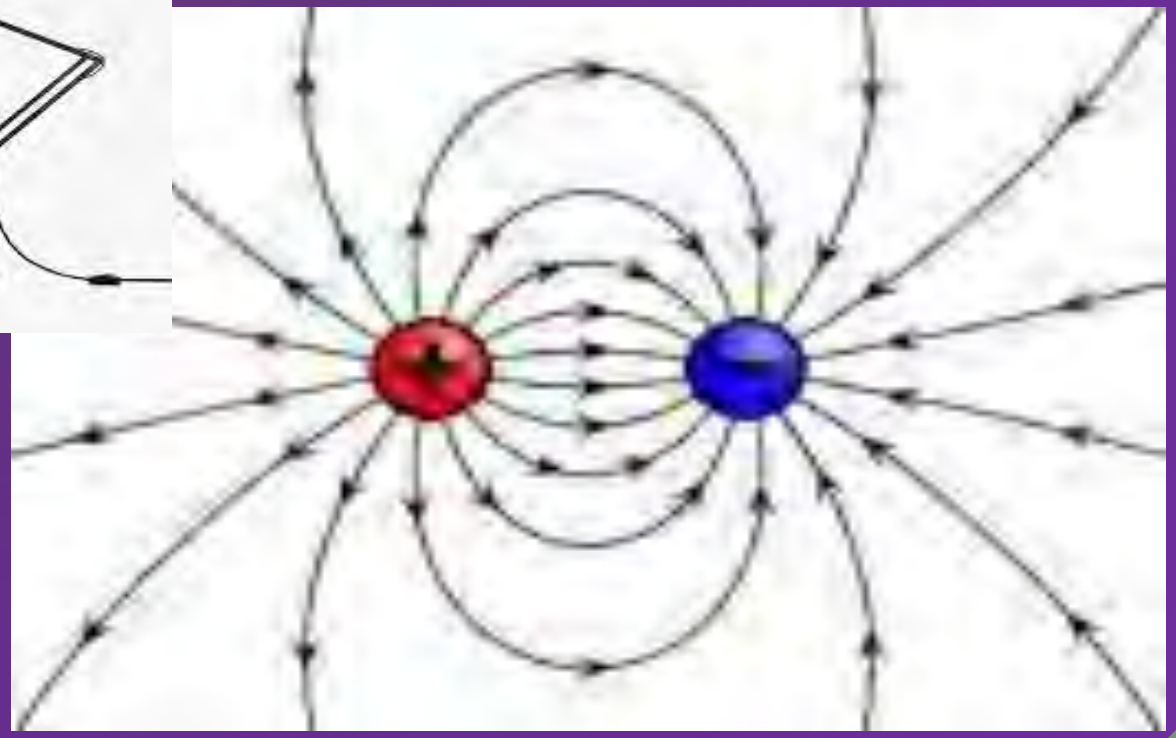
.org/images
01.jpg

ELECTRIC FIELD

Whenever a wire is plugged into an outlet.

Appliance could be turned on or off.

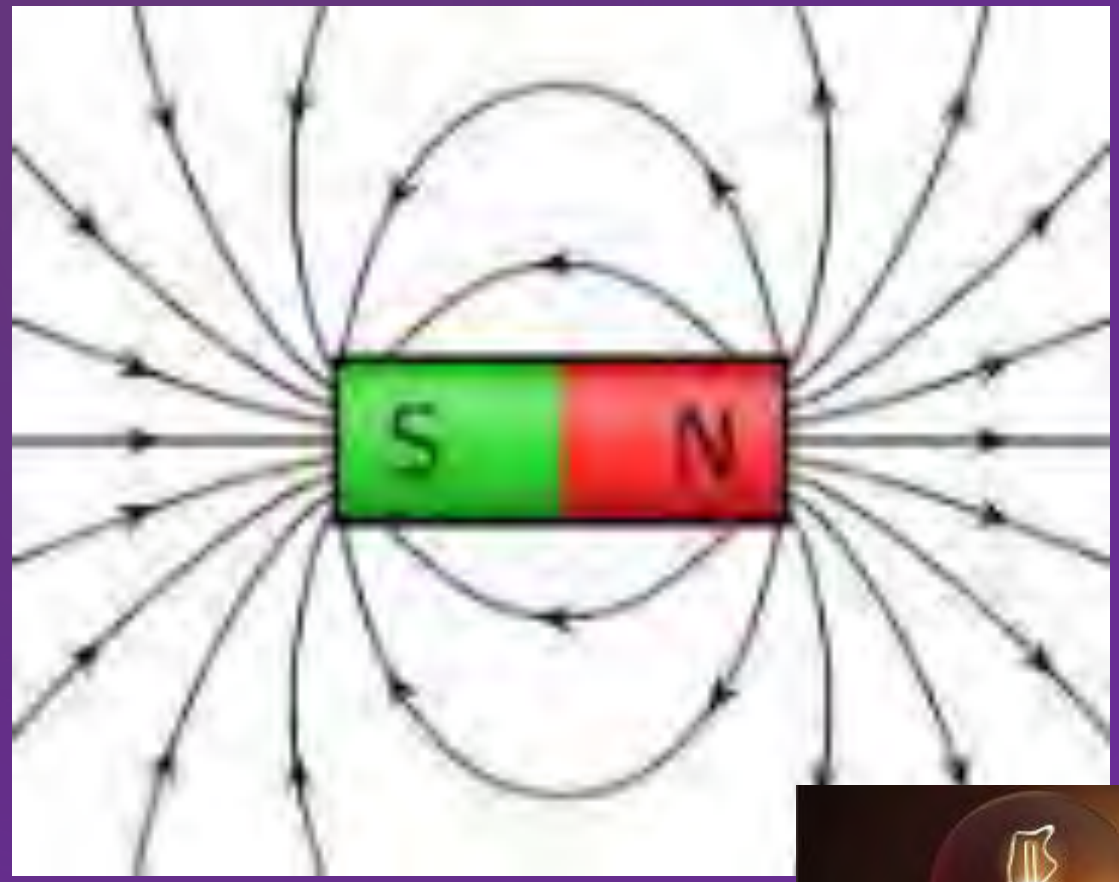
The greater the voltage, the greater the electric field.



MAGNETIC FIELD

Occurs when electric current is flowing within a device or wire.

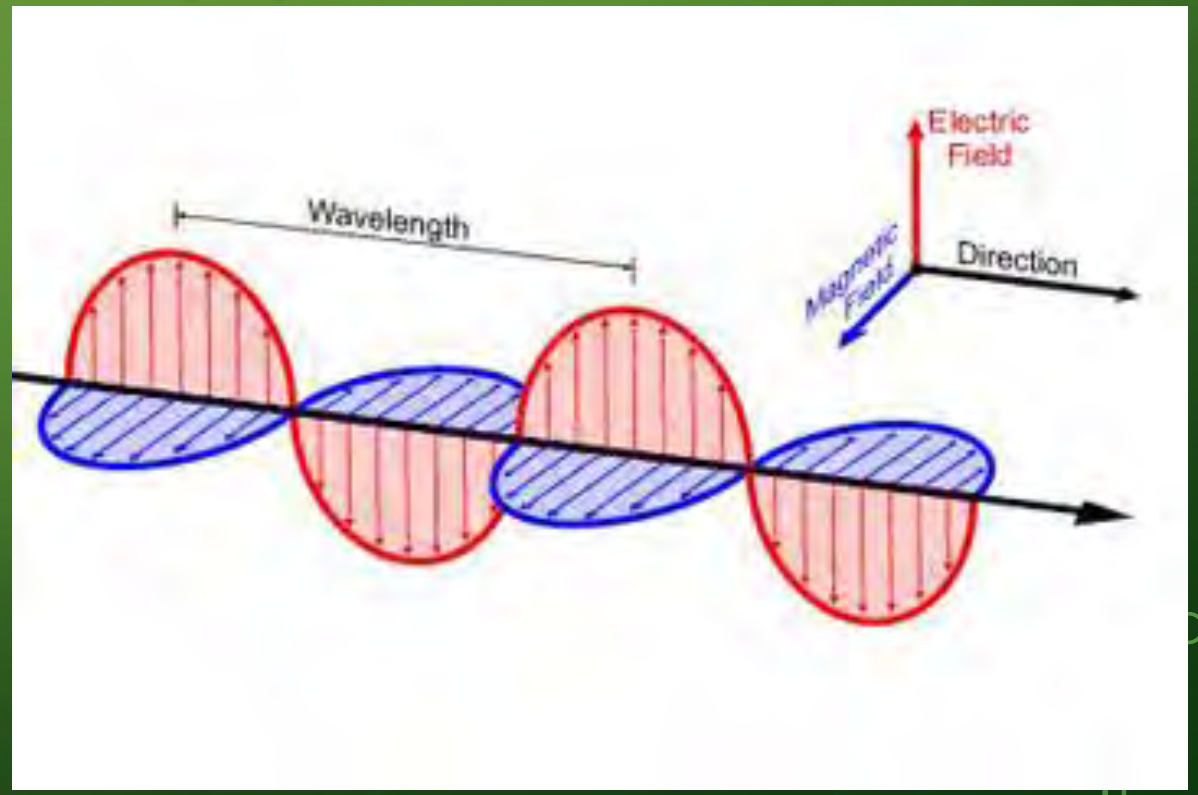
The greater the current, the stronger the magnetic field.



BUT WHAT'S EMF?

- As the name implies, it is the combination of an electric field (produced by a difference in voltage) and magnetic field (produced by moving charges). These fields move perpendicular to each other

  - These fields have different energies and wavelengths, depending on the charges/voltages that create them. We can put these energies on a spectrum…



http://i.livescience.com/images/i/000/054/779/i02/emwave.jpg?1373679311

SUBGROUPS OF ELECTROMAGNETIC RADIATION

1. **Extremely Low Frequency** - less than 300 Hz

(possible carcinogen: cellular mobile phone – 900 to 1800 MHz pulsed with extremely low frequencies <300 Hz.)

2. **Very Low Frequency** – 3kHz to 30kHz

3. **RF band** – 3kHz – 300GHz

4. **Electrosmog** – all fields known as EMF

ELECTROMAGNETIC HYPERSENSITIVITY

- RF radiation ranges from 3MHz to 300GHz – wifi, routers, smartphones, tablets, cordless phones, Bluetooth. **POINT SOURCES**.

- ELF EF and MF – 3kHz to 3MHz – (dirty electricity) electrical wiring, lamps, appliances.
- **It is diffuse and everywhere.**

- ICNIRP (International Commission on Non-Ionizing Radiation Protection) – only addresses ELF EMF and thermal effects of RF radiation.

EHC deals with non-thermal effects of RF radiation.

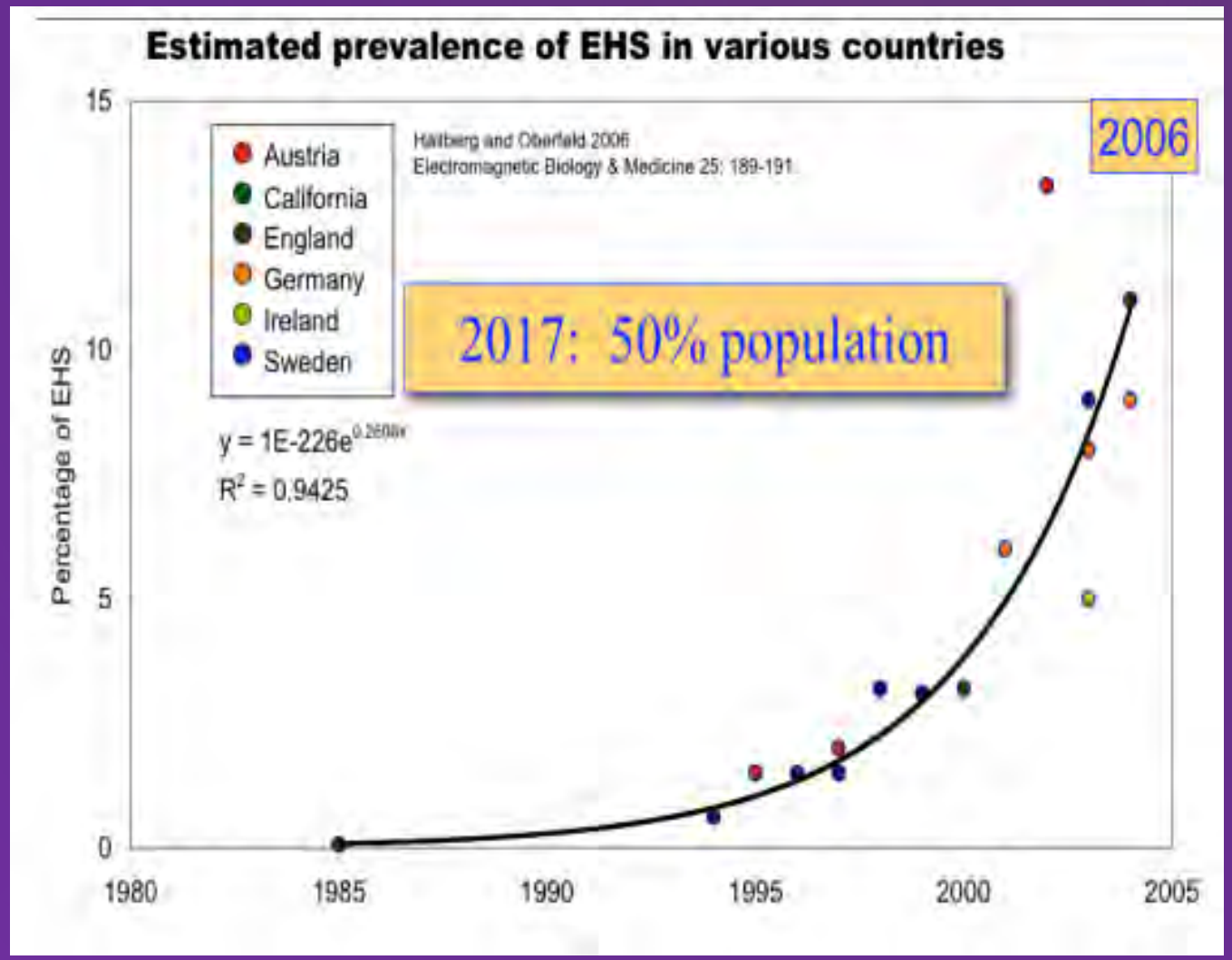
Various radiofrequency (RF) radiation guideline recommendations (given as µW/m2):

10 000 000 µW/m2 – FCC (USA) OET-65, recommendation
9 000 000 µW/m2 – ICNIRP 1998; WHO, recommendation
100 000 µW/m2 – Russia and Italy, recommendation
1 000 µW/m2 – the Bioinitiative Report 2007, recommendation
170 µW/m2 – the Seletun Statement 2010, recommendation

3 µW/m2 – the Bioinitiative Report 2012, revised recommendation *(Precautionary ceiling (top) level for 2013, may be revised at a later date)*
0.1 µW/m2 – contribution from the sun at daytime during big solar storms

0.000 001 – 0.000 000 000 01 µW/m2 – this is the natural background during normal cosmic activities; proposed by Olle Johansson, Karolinska Institutet (1997), as a genuine hygienic safety value. Above this level we could say electrosmog pollution is present, unless in the midst of a large solar storm.

INCREASINGLY PREVALENT & REPORTED, & RECOGNIZED



- WHO on EHS:

  "The symptoms are certainly real and can vary widely in their severity"

http://www.who.int/peh-emf/publications/facts/fs296/en/

http://www.electronicsilentspring.com/wp-content/uploads/2014/01/Dr-Erica-Mallery-Blythe-EHS-A-Summary-Working-Draft-Version-1-Dec-2014-for-EESC-Brussels.pdf

SAFETY CODE 6

- Absorption of RF energy is commonly described in terms of the specific absorption rate (SAR), which is a measure of the rate of energy deposition per unit mass of body tissue and is usually expressed in units of watts per kilogram (W/kg).
- Based on 6 minutes of exposure only to elevate the skin surface by 1 degree Celsius.
- Only thermal effects considered.

SAFETY CODE 6

- Does not consider multi-hour and multi-day exposures OR cumulative effects from multiple devices
- 100 000 000 $\mu W/m^2$ upper limit, 3kHz – 30 GHz (now reduced by about 50%)
- Does not distinguish between children, elderly, pregnant women or sensitive or ill individuals.

ALL TESTING HAS BEEN DONE ON THE ADULT MALE, THERMAL HEAT TISSUE EFFECTS ONLY CONSIDERED

- As long as exposure is below the SC6 threshold, Health Canada considers the radiation to be 'safe'.

- **DOES NOT CONSIDER CALCIUM FLUX, BBB PERMEABILITY OR DNA DAMAGE.**

RF Exposure from various sources.

- Cell phone (Maximum power at ear) 50000000 µW/m2
- Cell phone (1% duty per day at ear) 50000 µW/m2
- Cell phone (1% duty per day whole body) 0.75 µW/cm2
- Cell tower (Maximal exposure 60 m from school) 0.83 µW/cm2
- Typical smart meter (peak power at 20 cm) 227 µW/cm2
- Typical smart meter (peak power at 3.1 feet) 10 µW/cm2
- Typical smart meter (peak power at 5.7 feet) 3 µW/cm2
- Typical smart meter (5% duty cycle at 20 cm 11 µW/cm2
- Typical smart meter (5% duty cycle at 3 feet) 0.545 µW/cm2
- WiFi Router (100 mW maximal power at 3 feet) 1 µW/cm2
- Source: Karl Maret, personal communication, “duty cycle” is thepercent of the day a person is exposed, 1 foot is equal to 30.4 cm.

IDEAL VALUE RANGES OF EXPOSURES

- **ELF electric fields** (ideally should be <5V/m)
- **ELF magnetic fields** (ideally should be < 2 mG)
- **RFR** ideally should be <10 μW/m2 in sleeping areas and < 100 μW/ m2 indoors.
- **Dirty Electricity** should ideally be <40 GS (Graham Stetzer measure of energy)
- **Ground current** – "stray voltage" should be determined as a possible source.

PARAMETERS OF EXPOSURE:

F.I.N.D. (MAGDA HAVAS)

F- frequency

I – intensity

N- nearness

D- duration

Multiple Chemical Sensitivity Case Criteria

Multiple Chemical Sensitivity: A 1999 Consensus

- Bartha et al. Archives of Environmental Health, May/June 1999; 54(3): 147-9; Based on: Nethercott JR, Davidoff LL, Curbow B,
- et al. Multiple chemical sensitivities syndrome: toward a working case definition. Arch Environ Health 1993;48:19-26

- **The symptoms are reproducible with [repeated chemical] exposure.**
- **The condition is chronic.**
- Low levels of exposure [lower than previously or commonly tolerated] result in manifestations of the syndrome.
- The symptoms improve or resolve when the incitants are removed.
- Responses occur to multiple chemically unrelated substances.

[Added in 1999]: Symptoms involve multiple organ systems.

This pattern of symptoms are also reported for sensitivities to electromagnetic phenomena.

EHS/ MCS (BELPOMME, 2015)

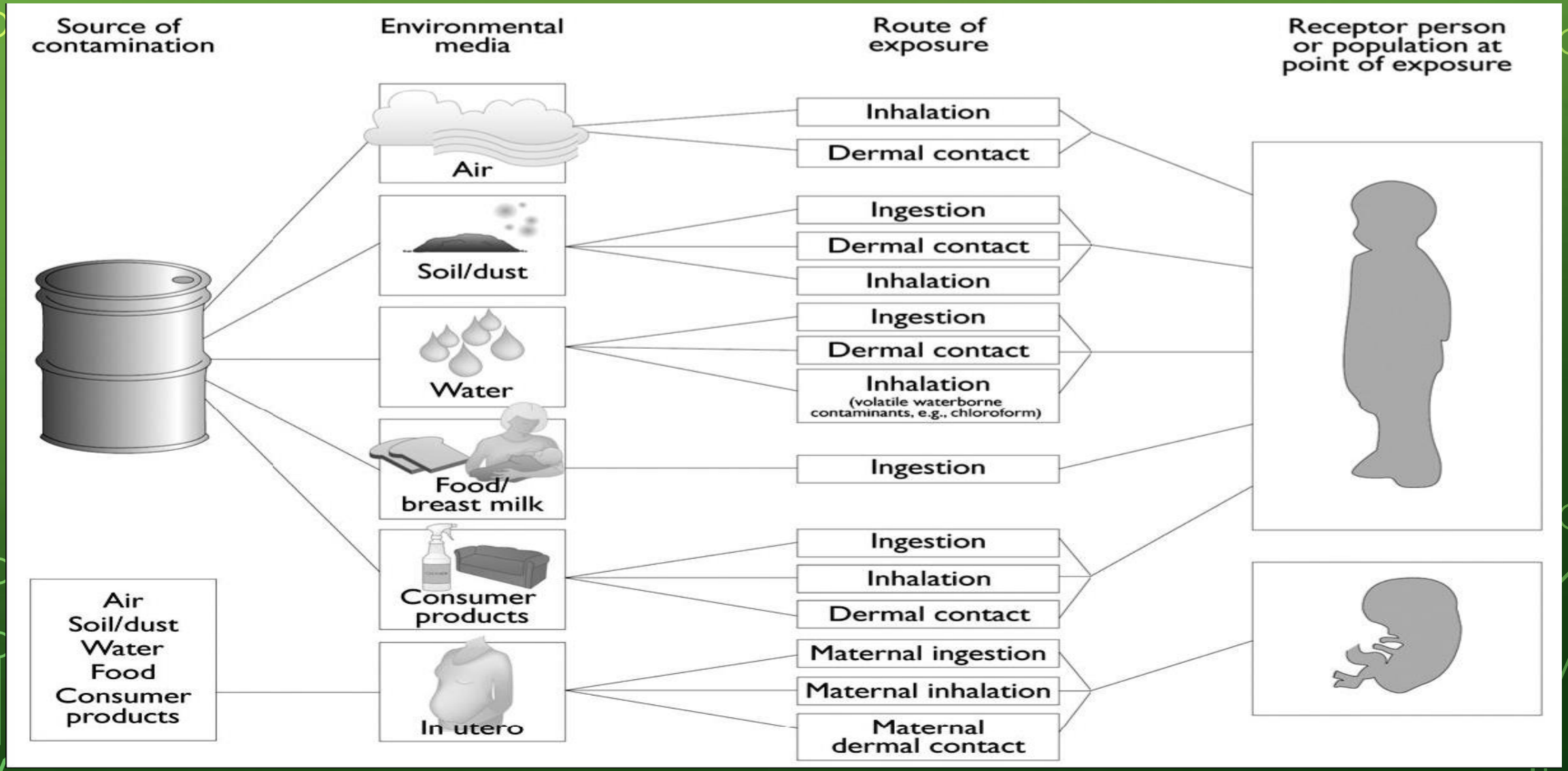
- **No** specific biomarkers
- **Genetic polymorphisms** associated with conditions
- These are **genuine**, somatic pathological entities
- Under the influence of EMF/chemicals a cerebral **hypoperfusion/ hypoxia-related neuroinflammation** may occur
- Presents with symptoms of **Inadequate regulation (decompensation)**

RADIOFREQUENCY RADIATION CAUSES:

(MARTIN PALL; DE LUCA/ HERBERT AND SAGE)

- Oxidative stress in biological systems, histamine release **DERMATOLOGICAL**
- Peroxidation, DNA damage, changes to antioxidant enzymes.
- Voltage gated calcium channel dysregulation **CARDIAC AND NERVOUS SYSTEM**
- Peroxynitrite formation which causes chronic inflammation, damage to mitochondrial function and structure, reduction of ATP. Reduced glutathione and CoQ10 **FATIGUE AND PAIN**
- .

Pathways of Other Exposures



CLINICAL FINDINGS ARE NOT SPECIFIC

- Multi-morbid picture where various problems need to be delineated and addressed in order to overcome the symptom complex.

QUESTIONNAIRES

- Sensitivity ?
- Specificity ?
- Validation – not yet done
- Exposure History – total load/ predisposing and precipitating factors established through CH2OPD2

CH2OPD2 – BODY BURDEN (TOTAL LOAD OF XENOBIOTICS/ EMF EXPOSURE)

- **C - community**
- **H – home/hobbies**
- **O – occupation/ school**
- **P – personal**
- **D – diet/drugs**

All these classifications delineate degree of exposure to various sources of EMFs

EXTENSIVE MEDICAL, PSYCHO-SOCIAL AND

ENVIRONMENTAL HISTORY IS DONE WITH

QUESTIONNAIRES AND A LONG DETAILED

ASSESSMENT

FAMILY MEMBERS ARE THE BEST LITMUS PAPER TEST

- Lack of understanding of phenomena leads to at times serious family conflict, child custody battles, labeling and stigmatization.
- More often, spouses and children witness double blinded casual occurrences that convince them that this is not a nocebo effect
- Patients will feel anxious about potential exposures because they know how aweful they feel when exposed. This gives the impression paranoia.

SYMPTOMS

- Irritability, lack of appetite, memory problems, vertigo, visual, skin and vascular problems. (Gomez-Perretta et al. Subjective symptoms related to GSM radiation from mobile phone base stations, BMJ, 2014)
- Tinnitis, sleep disorders (disrupted stage 4 sleep) and therefore mood and personality changes (Bhat, Kumar and Gupta. Effects of mobile phone and mobile phone tower radiations on human health. 2013)
- Headache, weakness, pressure in the head, racing or fluttering heart. (Park and Knudson. Medically Unexplained Physical Symptoms. Statistics Canada 2007)
- Itch, pain, edema, erythema, Morgellons disease secondary to transthyretin concentrations (Johnansson O, Disturbances 2009)
- Neurasthenic and vegetative symptoms: fatigue, tiredness, concentration difficulties, dizziness, nausea, heart palpitations, and digestive disturbances (WHO, Electromagnetic Fields and Public Health, December 2005)

ADVERSE BIOLOGICAL EFFECTS

Thermal (heat related)

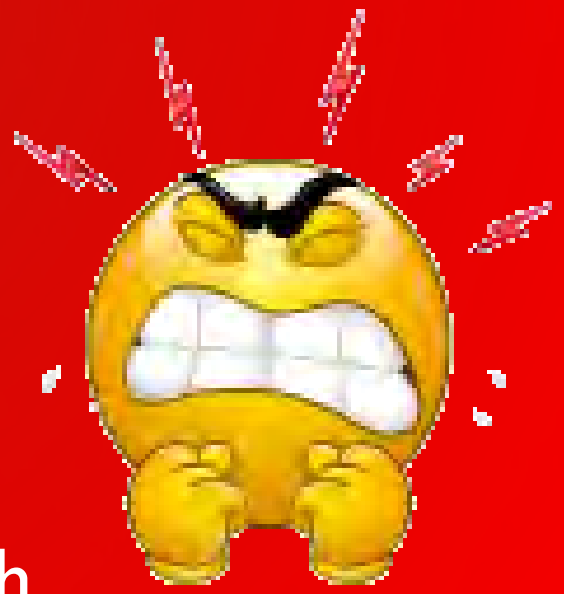
Non-thermal (inflammation and electrochemistry)

- Damage our DNA
- Suppress the immune system
- Leakage of the blood-brain barrier
- Thickening of the blood
- Cardiovascular/ neurological/ endocrine system effects
- Electromagnetic hypersensitivity –cognitive problems/ fatigue/ tinnitus/ headaches
- Problems with sleep

SYMPTOMS

- Headaches
- Dizziness
- Sleep disturbance
- Sensory upregulation
- Palpitations

- Pain in multiple sites
- Twitching
- Fatigue or hyperactivity
- Memory disturbances
- Brain fog



- Interestingly, these symptoms resolved with withdrawal of the inciting electromagnetic frequency!

http://www.electronicsilentspring.com/wp-content/uploads/2014/01/Dr-Erica-Mallery-Blythe-EHS-A-Summary-Working-Draft-Version-1-Dec-2014-for-EESC-Brussels.pdf

NOCEBO EFFECT

It is the phenomenon in which inert substances or mere suggestions of substances actually bring about negative *effects* in a patient or research participant.

CATEGORY I – PHOBIAS (MINORITY)

- Use of commercial shielding products which supposedly transform frequencies into anthropomorphically acceptable levels and therefore protect one from harm.
- Comes in wearable jewellery and stickers. Clearly this technology is controversial.
- Wifi App – detection of signals – causes anxiety.
- Might be able to use the cell phone at ear, but feel unwell when they see a cellphone tower.

CATEGORY II – TOXIC METAL BODY BURDEN

- dental amalgams– multiple cases seen of those with more than 4 very large, degrading dental amalgams and severe sensitivity to EMFs or recent extraction.
- Those who have high mercury from consuming ++fish/ seafood weekly.
- Present with headaches (lancinating and heaviness), brainfog, fatigue, anxiety, - reacting to router/ wifi Hubbs at work.
- Metallic implants and dental material.
- Herrington Rod – paresthesias, whole body weakness.
- Question? – how about braces?? – no studies have been done.

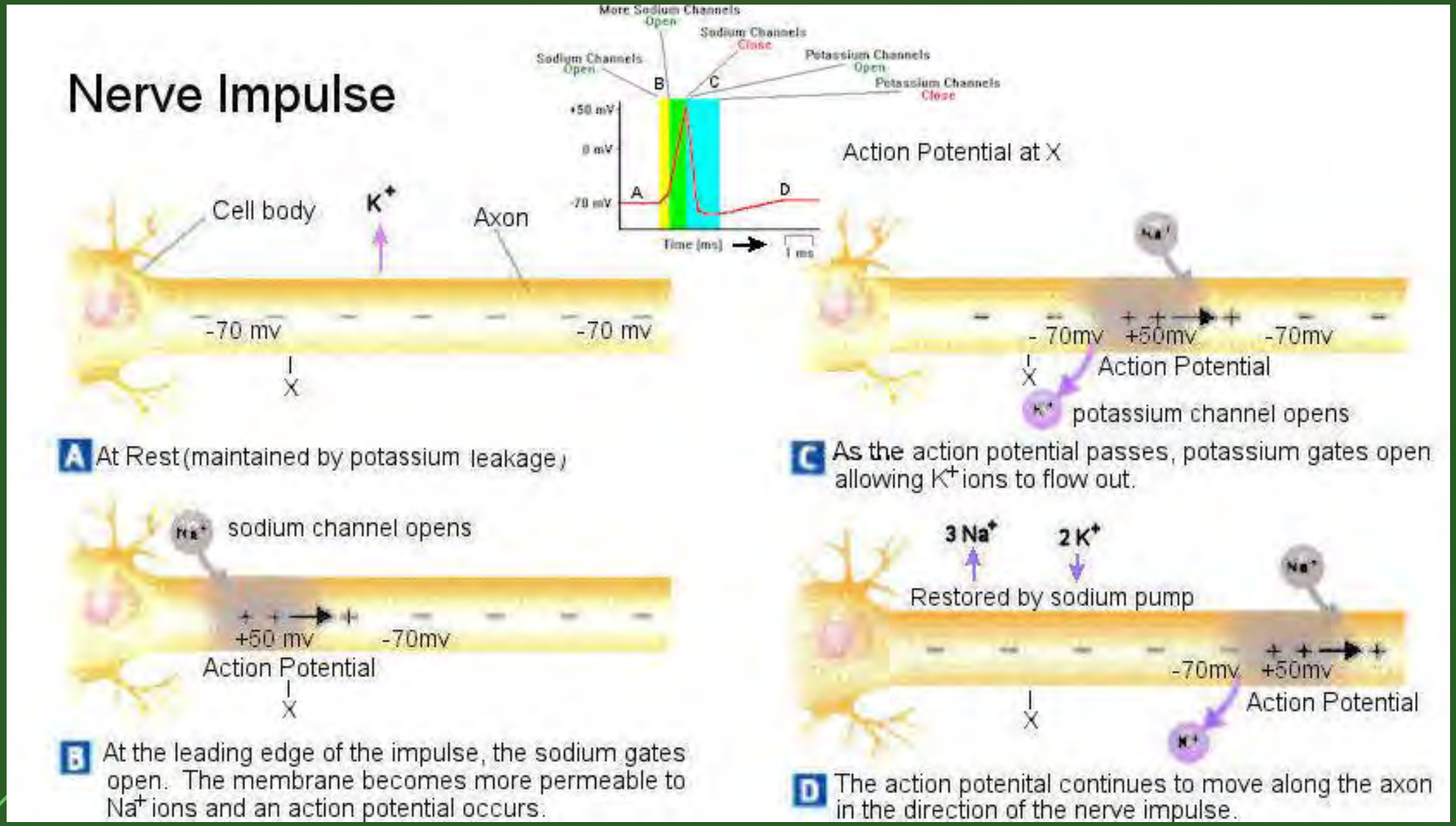
CATEGORY III - LYME DISEASE AND OTHER RELATED CO-INFECTIONS THAT AFFECT THE NERVOUS SYSTEMS

- Central or peripheral nervous system vulnerabilities, neuroborreliosis cerebral vasculitis.
- Present with tremor, dysarthria, ataxia, extreme fatigue, headache, cognitive dysfunction, presyncope, mood disturbances
- improvement with antibiotics
- reduced body burden through detoxification and antioxidant therapy, improves by about 30%, then relapse.
- Oxygen therapy 100% improvement but when stopped, complete resumption of symptoms within minutes.
- Removal of all wifi/ EMF emitting sources such as DECT phones and microwaves at home. Complete 100% improvement. Walking, talking , mentation all normal.
- fMRI and SPECT scan, PET scan research needed here.

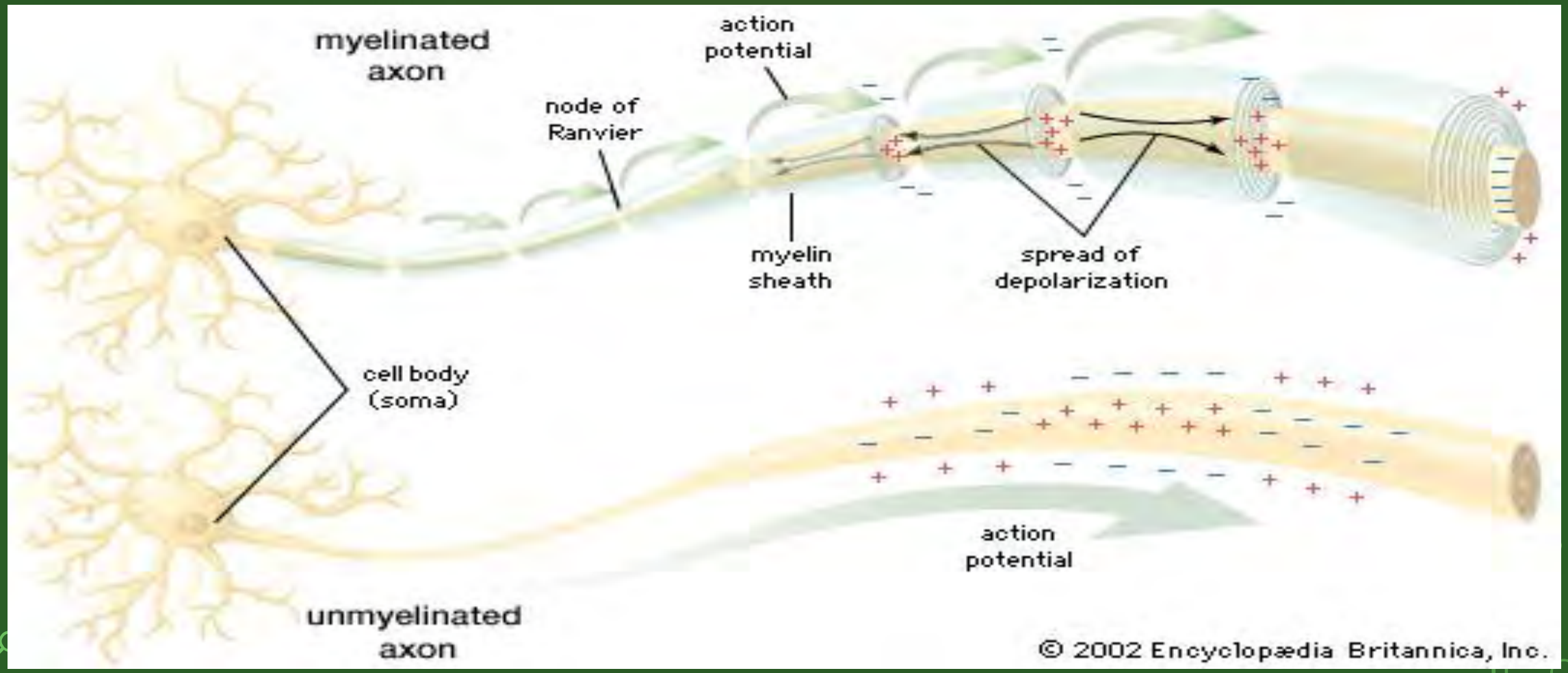
CATEGORY IV
LESIONS/ INFLAMMATION/ NEURODEGENERATIVE DISEASES OF THE CNS

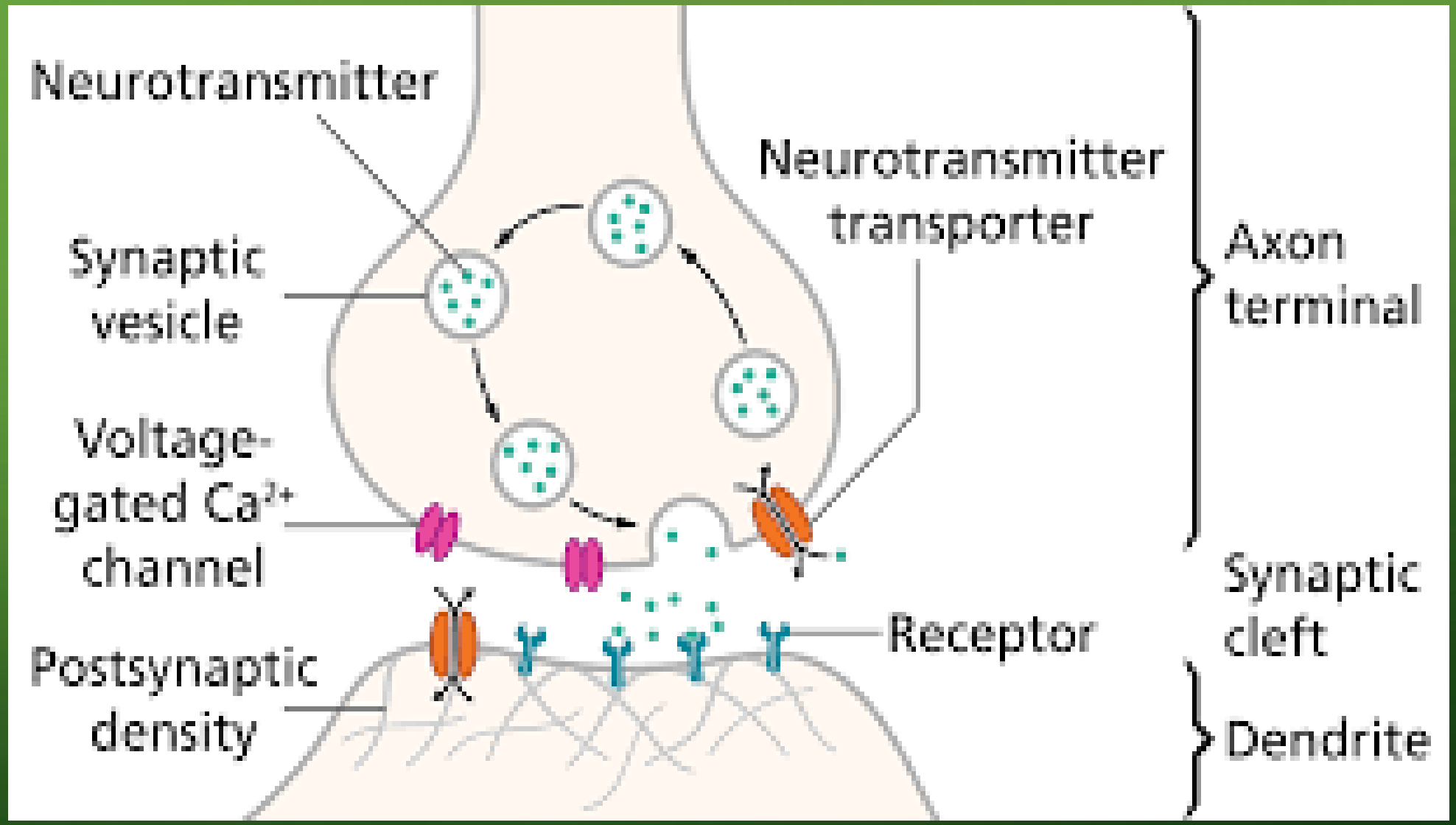
- Pituitary adenomas, MS, neurotoxic pesticide exposures, nonspecific white matter findings/ demylination / (simple aging and dementia??)
- headaches, brain fog, fatigue, restlessness and low mood, tinnitus(+/-)
- Questions: how does alcohol or psychogenic drug use alter the response? We know that inflammatory mediators released in the brain of MCS patients likely potentiates the effects. OVERLAP.
- fMRI, SPECT scans and PET scans looking at cerebral blood flow and glucose metabolism could be helpful.

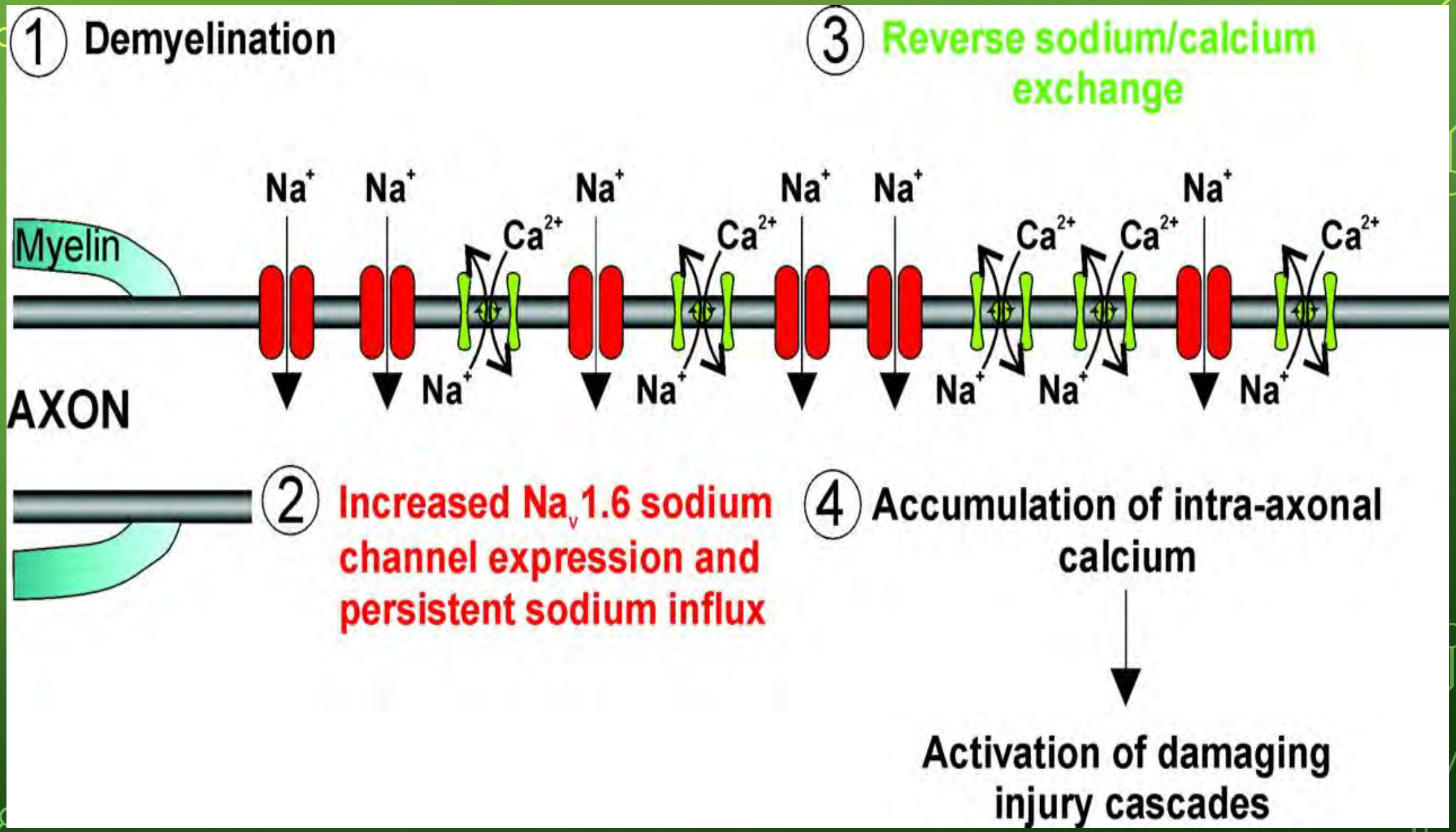
CHARGES FLOWING ACROSS NEURONS



CURRENT ALONG A NEURON




Neurotransmitter
Neurotransmitter transporter
Synaptic vesicle
Voltage-gated Ca^{2+} channel
Postsynaptic density
Receptor
Axon terminal
Synaptic cleft
Dendrite


1 Demyelination
3 Reverse sodium/calcium exchange
Myelin
AXON
Na+
Ca2+
2 Increased Nav1.6 sodium channel expression and persistent sodium influx
4 Accumulation of intra-axonal calcium
Activation of damaging injury cascades

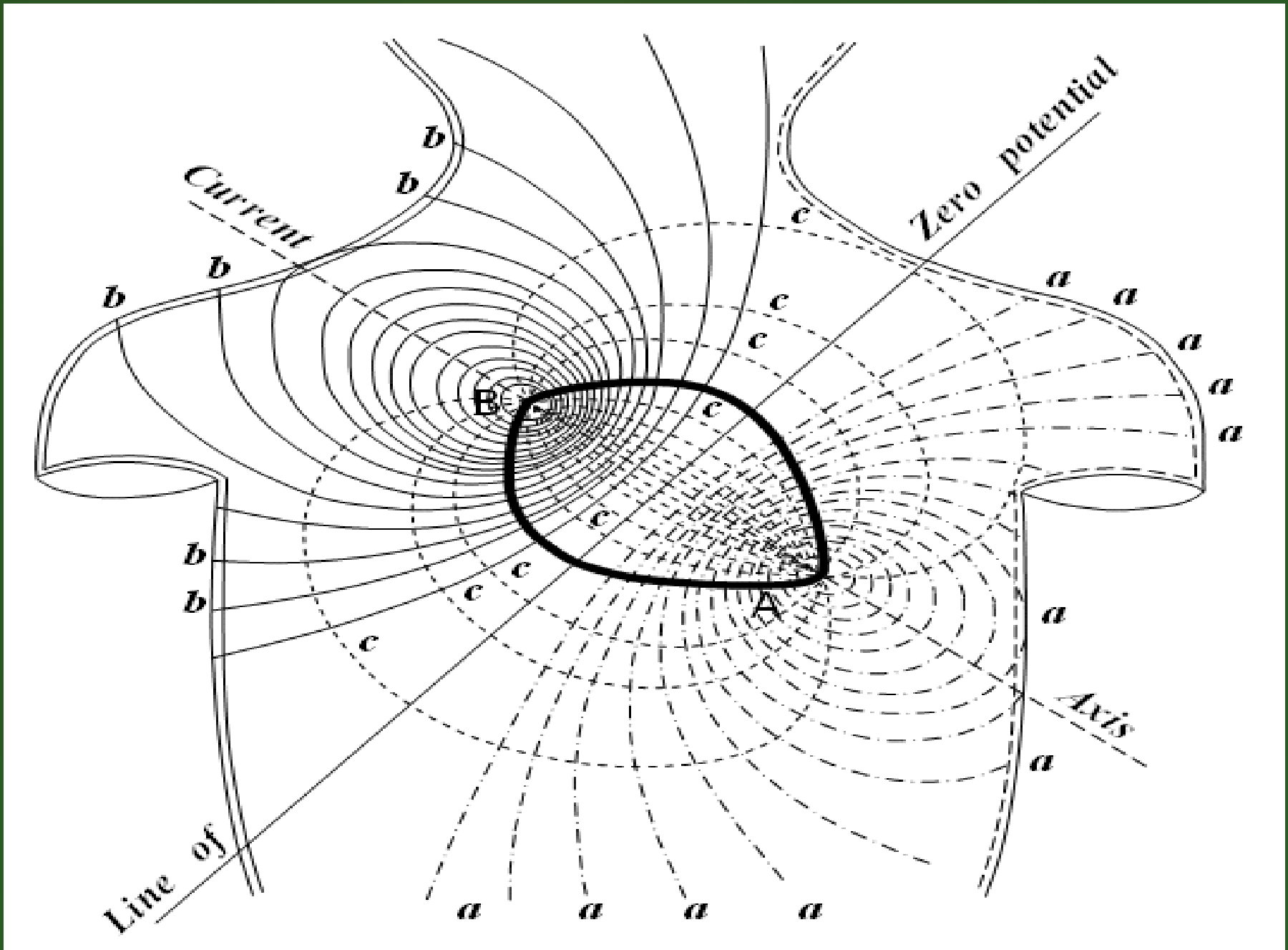
VOLTAGE GATED CALCIUM CHANNELS

- VGCC are present at a very high density in the nervous system and are responsible for releasing neurotransmitters and neuroendocrine hormones. (Martin Pall, 2015)

- Is there a role for calcium channel blockers for treatment ???

CATEGORIES V – HEART RHYTHM DISTURBANCES

- conduction problems
- presyncope, tachycardia, PVC, PAC, atrial flutter.
- Holter monitor shows rhythm disturbances near cellphone towers and in areas with much wifi usage ie. Retail stores.
- Many have predisposing cardiac problems but problems occur with high, chronic EMF exposure to dirty electricity, ELF EMF such as wiring of computer equipment around a work station/ smart meters/ wifi or cellphone towers.
- Very alarming and causes severe anxiety
- Sleep time can be also particularly difficult



http://www.bem.fi/book/01/fi/0117.gif

CATEGORY VI – ADRENAL FATIGUE/ EXHAUSTION

- Worse with a poor diet (low in nutritional value or not balanced due to food sensitivities) causing deficiencies, chronic stressors (emotional, physical ie. Extreme sport burn out)
- Brain fog, fatigue, head pressure headaches, body aches, palpitations, dizziness, transient anxious spells and low mood while exposed.
- DHEA low and 24 hour salivary cortisol profile abnormal

CATEGORY VII – STUDENTS AND TEACHERS

- Schools, universities and colleges.
- Teachers and children can be exposed to high levels of EMF.
- “FIND” – all high
- Wifi connected Laptop and ipads in schools are the worst case scenarios.
- Much fear of losing jobs or seeming paranoid/ “not cool”.
- Predisposing health risk factors make them even more vulnerable.
- Many may feel unwell but cannot attribute it correctly to the source due to lack of knowledge of surrounding technology.

COMMONALITIES IN EHS

- Everyone was sensitive to fluorescent lights to some degree.
- Sleep disturbances with multiple wakening, shock-like disruptions if there is any RFR > 10 μW/m2

DIAGNOSTIC TESTING (OBERFELD, 2016/ BELPOMME, 2015)

Biomarkers **in combination** would be helpful, but largely unavailable:

- Inflammation
- Mitochondriopathy
- Oxidative stress lipid peroxidation
- O-myelin Abs
- Nitric oxide production - nitrotyrosine
- lowered melatonin

TO FURTHER AID IN DIAGNOSIS…

- Biomarkers – salivary cortisol, alpha-amylase, transthyretin, blood sugar levels after provocation, live blood analysis showing Rouleaux formation.
- BP and Heart Rhythmn monitoring for 24 hours (night time changes) for heart rate variability and heart rate abnormalities (Havas, 2010)
- Histories – anecdotal evidence and data
- Questionnaires

MANAGEMENT AND TREATMENT STRATEGIES

TREATMENT STRATEGIES – (HAGSTROM ET AL. 2012, 2013)

- Firstly, reduce exposure.
- Home inspections recommended.
- Individual therapeutic approaches must be taken.
- CAM or Integrative Medicine is extremely helpful.
- Naturopathic doctor's support is appreciated
- Dietary changes, nutritional supplements
- Increased physical exercise
- **Psychotherapy is NOT HELPFUL**

TREATMENT (MAGDA HAVAS)

- R – reduce exposure
- I – immune system addressed
- D – detoxify by decreasing body burden
- E – emotional and psychological trauma needs attention for healing.

WEED SEED & FEED

CLEAN UP YOUR HOME/ WORK ENVIRONMENT

Reducing exposure:

- Hardwire everything possible
- ‘white zones’ clear of EMR
- Turn off all emitting devices at night.
- Stay clear of appliances.
- Consider Stetzer filters
- Corded phones only

EHS is recognized as a disability under The Canadian Human Rights Commission, 2007.

REDUCE EXPOSURE - ACCOMODATION

- Many are disabled with no accommodation, let alone validation of their illness.
- Accommodation would include shielding, hardwiring, prudent reduction of use or remedial action by attenuation or removal of the source.

SHEILDING

- Cost can be detrimental!
- Protective gear – clothing (pictures) with copper or silver threading.
- Protective shielding in dwelling or work place – foil or metal panels, metallic paints (all grounded), heavy foliage from trees.

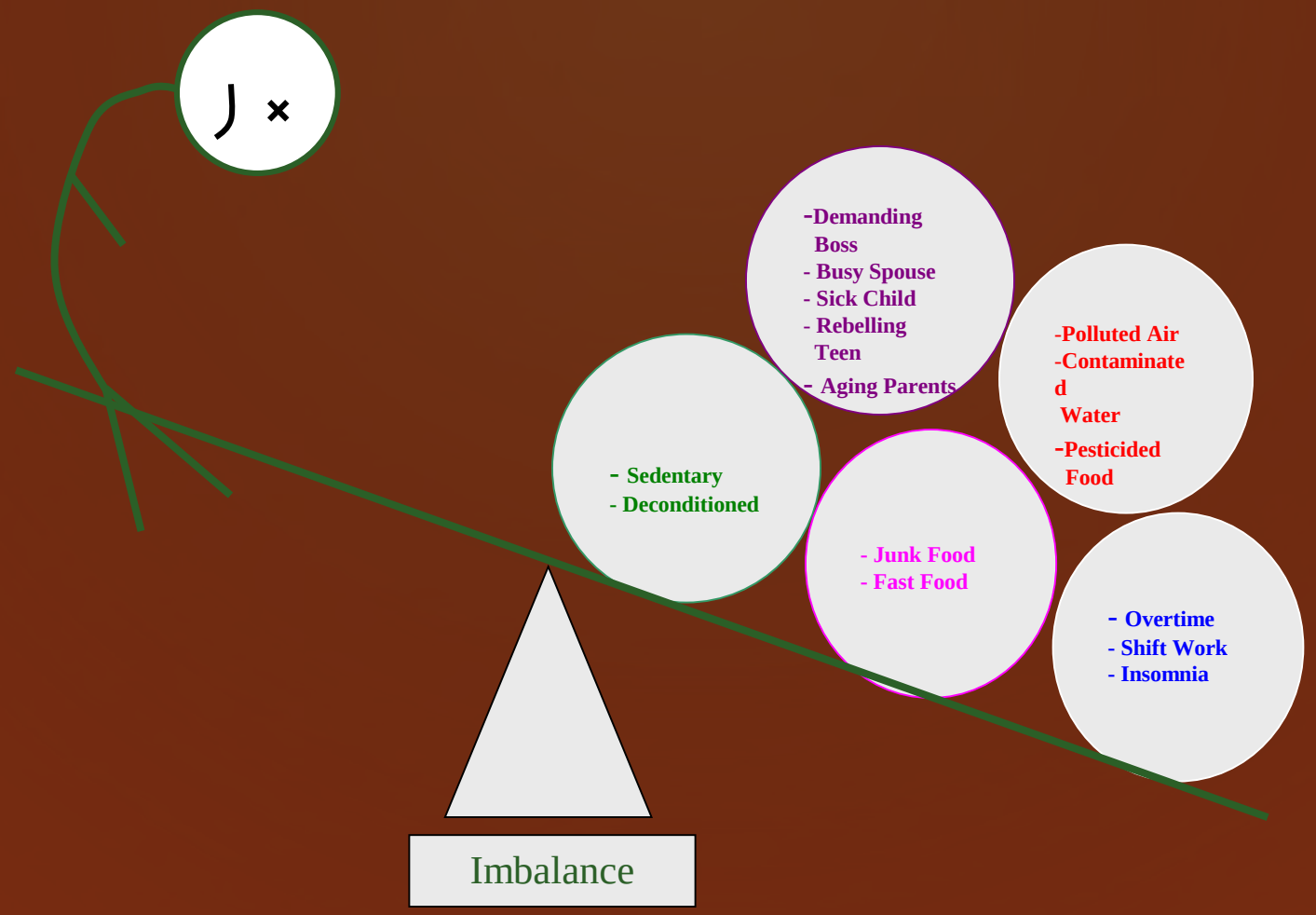
NON-IONIZING
RADIATION

SEEDS OF HEALTH

- **S** leep
- **E** xercise
- **E** nvironment
- **D** iet
- **S** upport (spiritual, family, social)

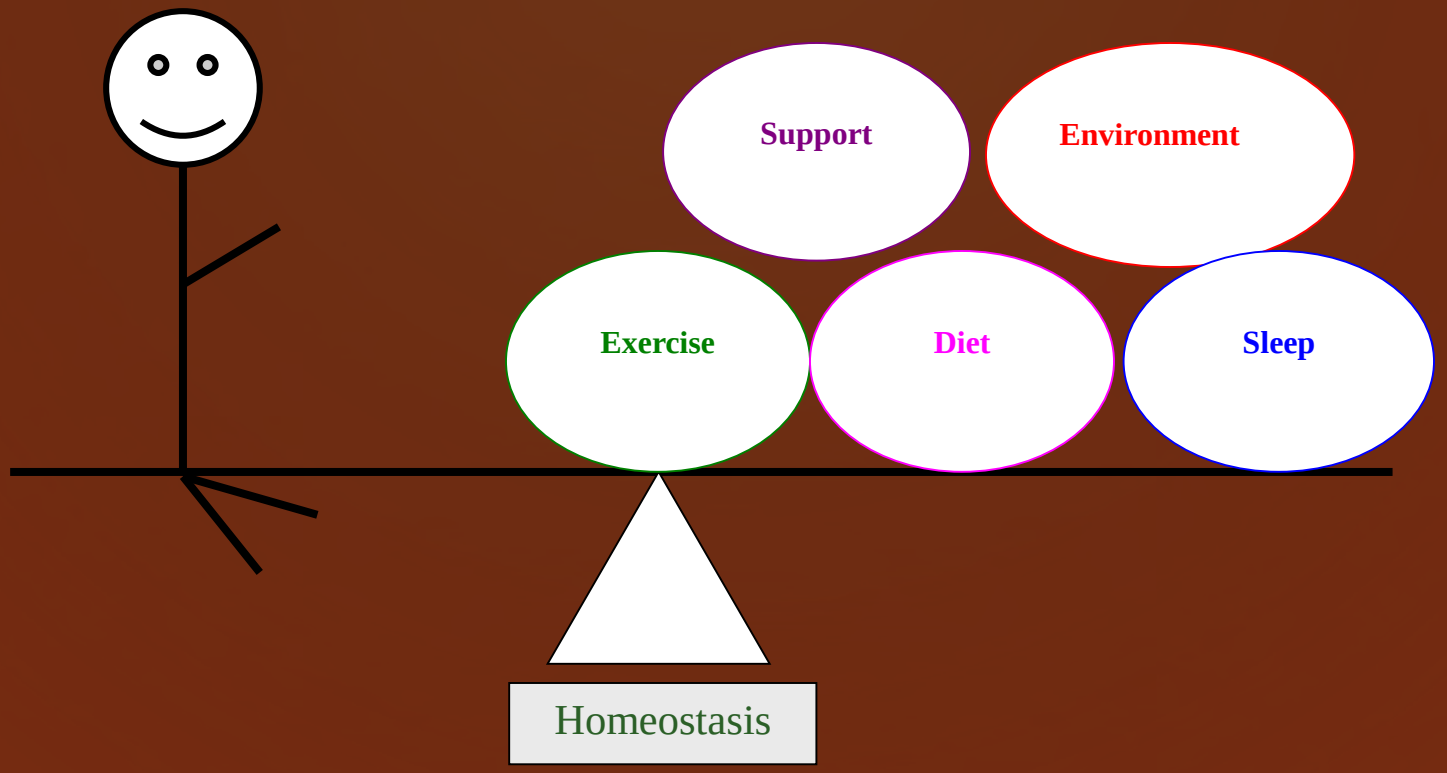
Exhaustion

Body Systems Stressors



Adaptation

Body Systems Seeds of Health



EXPOSURE REDUCTION PRINCIPLES TO DECREASE BODY BURDEN

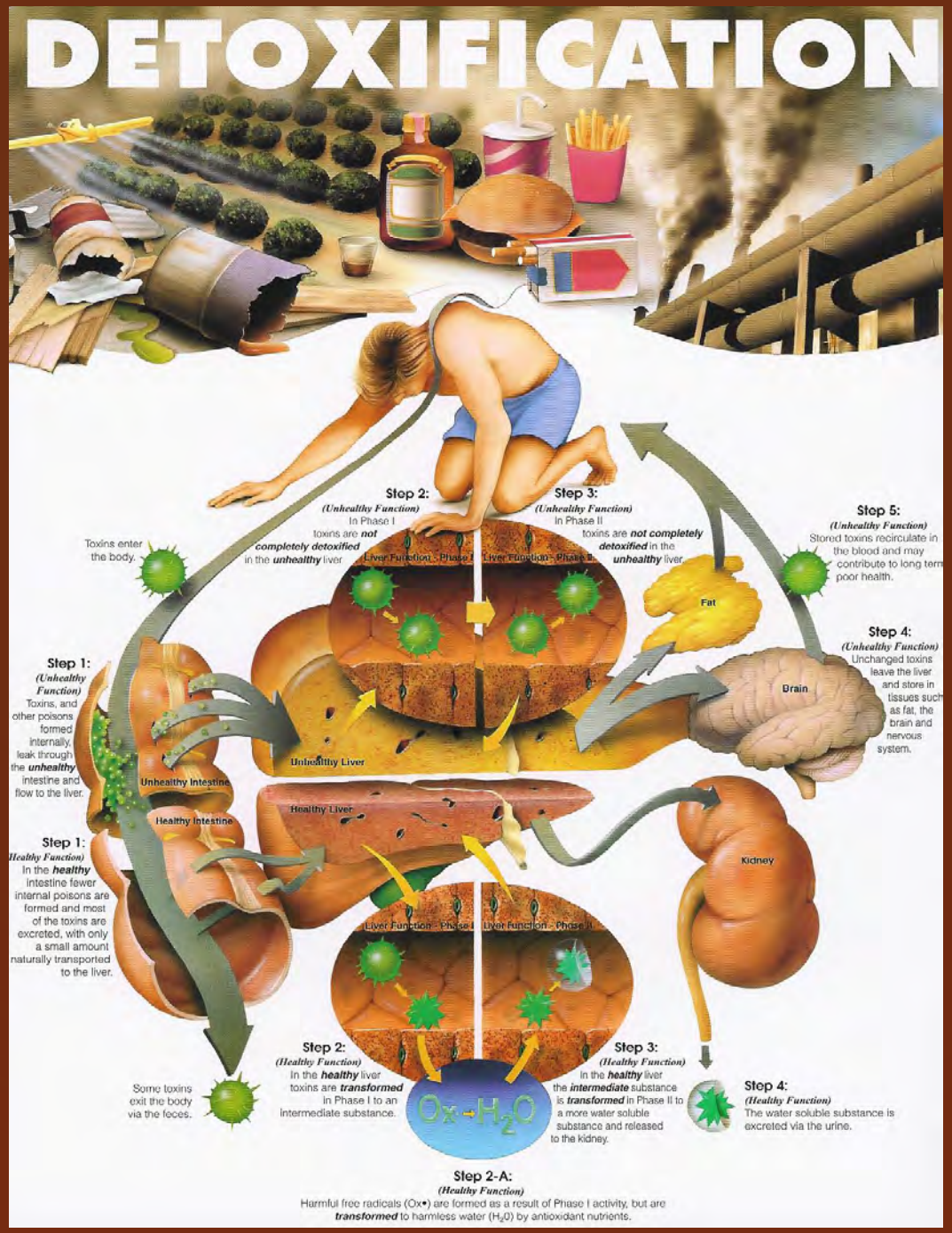
- <u>Decrease input</u>
- <u>Increase output</u>

Increase metabolic conversion rates

(enhance antioxidant reserves- fruits and vegetables)

Increase mobilization (hydration, exercise)

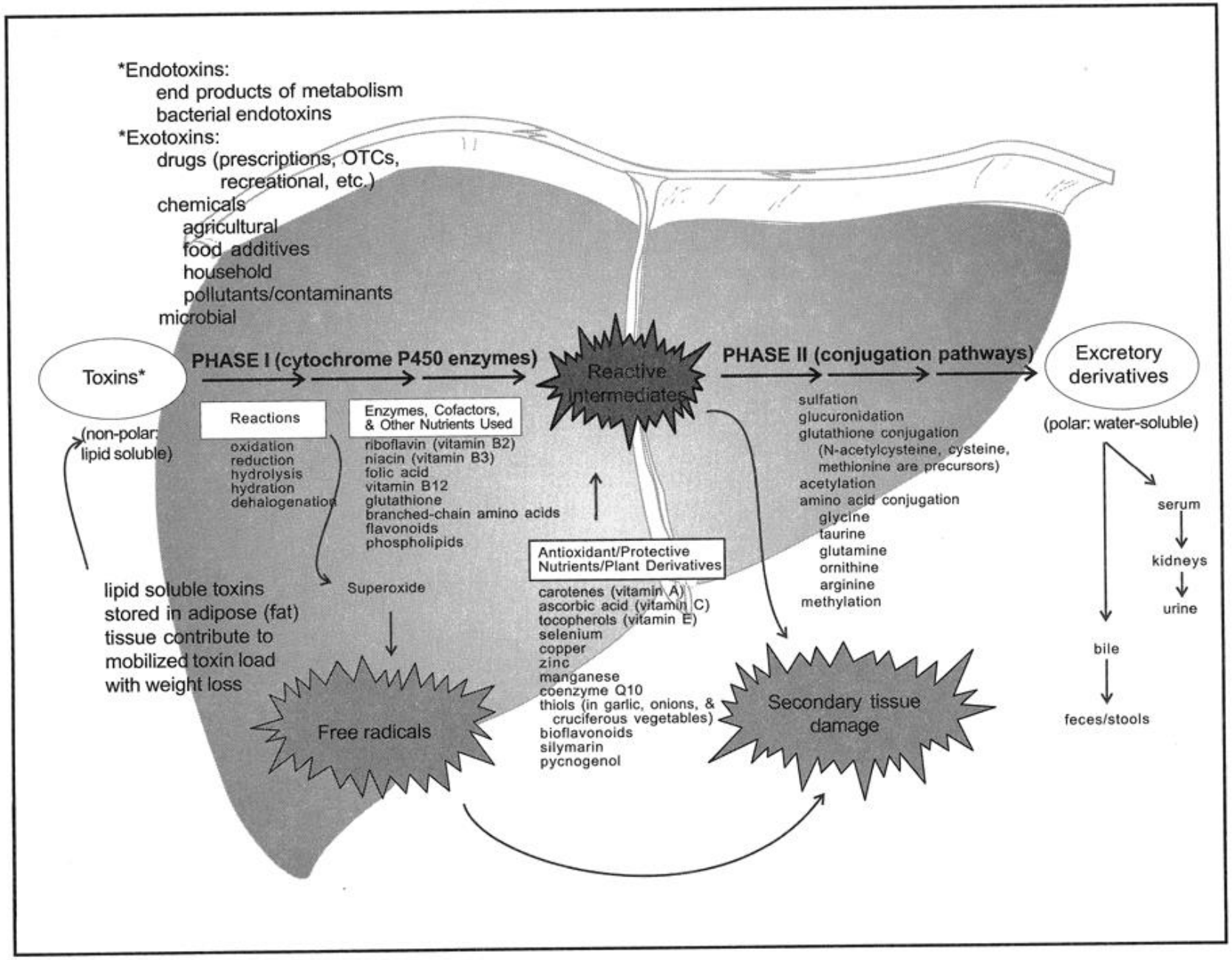
Assist excretion of toxins (optimize bowel and kidney function)


DETOXIFICATION
Step 2:
(Unhealthy Function)
In Phase I toxins are not completely detoxified in the unhealthy liver
Step 3:
(Unhealthy Function)
In Phase II toxins are not completely detoxified in the unhealthy liver
Step 5:
(Unhealthy Function)
Stored toxins recirculate in the blood and may contribute to long term poor health.
Toxins enter the body.
Liver Function - Phase I
Liver Function - Phase II
Fat
Step 4:
(Unhealthy Function)
Unchanged toxins leave the liver and store in tissues such as fat, the brain and nervous system.
Brain
Step 1:
(Unhealthy Function)
Toxins, and other poisons formed internally, leak through the unhealthy intestine and flow to the liver.
Unhealthy Liver
Unhealthy Intestine
Healthy Intestine
Healthy Liver
Kidney
Step 1:
(Healthy Function)
In the healthy intestine fewer internal poisons are formed and most of the toxins are excreted, with only a small amount naturally transported to the liver.
Liver Function - Phase I
Liver Function - Phase II
Step 2:
(Healthy Function)
In the healthy liver toxins are transformed in Phase I to an intermediate substance.
Step 3:
(Healthy Function)
In the healthy liver the intermediate substance is transformed in Phase II to a more water soluble substance and released to the kidney.
Ox→H2O
Some toxins exit the body via the feces.
Step 4:
(Healthy Function)
The water soluble substance is excreted via the urine.
Step 2-A:
(Healthy Function)
Harmful free radicals (Ox•) are formed as a result of Phase I activity, but are transformed to harmless water (H2O) by antioxidant nutrients.

NATURAL DETOXIFICATION AND HEALING

- Get your sleep - relaxed, natural, calm.
- Exercise daily in some way - enjoy
- Live, work, learn and play in safe and healthy environments
- Eat plenty of fruits and vegetable at every meal and for snacks, good quality proteins and oils, and high fibre carbs
- healthy nutrition which is balanced – no food additives, sweeteners or colouring.

The Phases of Detoxification



REDUCE BODY BURDEN AND IMPROVE FUNCTION

(OBERFELD, 2016)

- Reduce body burden – CH2OPD2 and exposures to EMFs
- Reduce oxidative stress – through excellent nutrition and supplements
- Reduce degree of gut dysbiosis/ food allergy or intolerances/ SIBO/ IBS/ celiac/ infectious diseases.
- Reduce (silent) inflammation
- Normalize mitochondrial function – magnesium, d-ribose, L-carnitine, coQ10

REDUCE BODY BURDEN

- Detoxification – mercury, lead, solvents (CNS) – ALA, NAC, glutathione, vit C, selenium, chelation with DMSA, DMPS, EDTA, sauna therapies, proper hydration, exercise
- Correct any dental work with toxic or immunoreactive materials – mercury, lead oxide, gold, titanium. (zirconium dioxide is ok)
- Remove dental amalgams and undergo chelation as necessary
- BEWARE OF POSSIBLE GENETIC POLYMORPHISMS (De Luca, 2014).

PSYCHOLOGICAL SUPPORT AND REMOVAL OF STRESS TRIGGERS

- CBT and MBSR cornerstone – your symptoms are real and there is a reason for feeling so unwell. Now how do you cope without panicking?
- Decrease sympathetic stress overdrive
- For heart arrhythmias – take propranolol or bisoprolol until sources of exposure can be eliminated.

REDUCING STRESSORS

- Correct any sleep disorders – magnesium, melatonin, fish oil
- Grounding – bare feet on mats, bodies of water such as tubs, lake or pool, special sheet at night.
- LIFE STYLE CHANGES ☺ at home, school and work.
- Green Banks Pennsylvania
- Support groups – C4ST, Electrosensibilitequebec.wordpress.com

RECOMMENDATIONS

- Future research, public health initiative, health care provider guidance.
- HESA report to the House of Commons – Radiofrequency Electromagnetic Radiation and the Health of Canadians, 2010 and 2015.
- Ontario wide, OMA-run (possibly PHO) mandatory physician survey of how many patients MDs have in their roster who complain of possible EMF related signs and symptoms.

RECOMMENDATION

- Gaps in knowledge and understanding in the medical community and the general public about how this technology works and their health impacts need to be addressed.

LOOKING AHEAD

- This is a political and ethical challenge that needs grass roots momentum for change.
- The World Social Forum is a fantastic platform to effect change.
- We can and must use technology wisely.

THANKS TO OUR MEDICAL STUDENT,
KARL AYTON FOR SOME OF THE SLIDES

QUESTIONS?

THANK YOU!