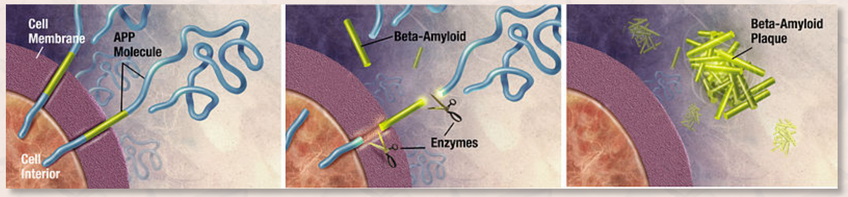
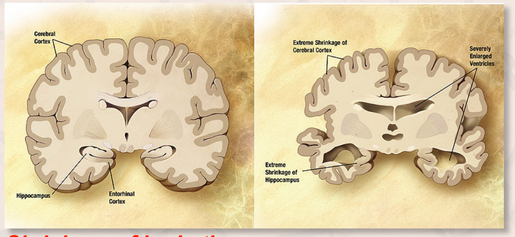
Alzheimer's Disease and EMF

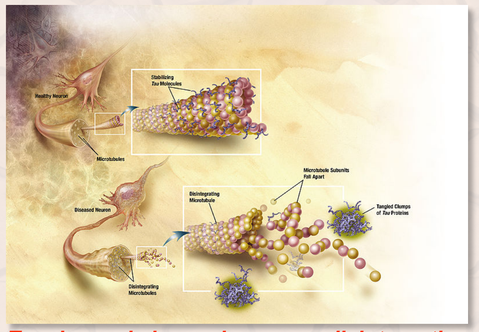
Microwaves and Alzheimer's Disease: A Review



Beta-amyloid plaque develops



Shrinkage of brain tissues



Tangles and clumps in nerves, disintegration

Alzheimer's disease is not a memory disorder; more accurately, it is a degeneration of neural and supporting tissue in the brain. ***It is characterized by the presence of fiber tangles within nerve cells, plaques or clusters of degenerating nerve endings, accumulation of beta-amyloid (a beta) proteins, as well as decreases in important neurotransmitters -- especially acetylcholine.***

Failure of memory functions is just one effect of the process. ***Other cognitive and brain functions gradually deteriorate.***

EMF has been studied in relationship to Alzheimer's Disease (AD) because of higher incidence of this disease in EMF-exposed workers. Several possible different, or perhaps combined mechanisms, have been proposed to explain this incidence: melatonin effects, calcium efflux and neurotransmitter alterations, breech of the blood-brain barrier, aggravation of toxic insults.

This map provides links to overviews on the topic as well as studies on various factors associated with EMF and its impact on this specific pathology.

- BioInitiative Report 2012
- BioInitiative Report 2012: Alzheimer's
- Compilation of abstracts on EMF and AD
- Six Studies: EMF and Alzheimer's Disease
- Occupational exposures and AD: a meta-analysis
- ★ EMF said to protect, but may cause via BBB, more
- Occupational exposures and AD: a collection of abstracts

Melatonin in humans and EMF studies

- Light, ELF, circadian rhythm
- Video display units, melatonin
- Day exposure, night melatonin
- Cellphone use, ELF, melatonin
- Night exposure, night melatonin
- Railway workers, ELF, melatonin
- High power lines, female melatonin
- EMF, signal transduction, melatonin receptors
- Melatonin may protect against Alzheimer's disease

Cell phones, power lines, AD

- Alzheimer's mouse study response
- Power-Line EMFs, New Focus on AD
- Living near power lines, more AD risk
- Living near power lines, more AD risk, study

- Presentation on EMF and EHS
- Interview on EMF, EHS and Alzheimer's
- Melatonin, AD, circadian rhythm disruption
- See Also: EMF Map on Melatonin Hypothesis

Melatonin... helps prevent... Alzheimer's disease... There is strong evidence from epidemiologic studies that high (≥ 10 milligauss or mG), longterm exposure to extremely low frequency (ELF, ≤ 60 Hz) magnetic fields (MF) is associated with a decrease in melatonin production.
BioInitiative Section 12

ELF-EMF levels between 0.6 and 1.2 μT have been shown to consistently block the protective effects of melatonin.
BioInitiative Section 13

AD Overviews

- Blood-brain barrier and AD
- Important factors in AD
- Disrupted biologic clock, AD

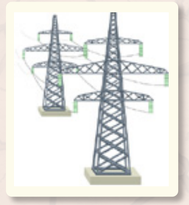
AD and EMF studies

- Increased a beta
- Electricity and AD
- A beta protein, EMF
- RF, AD, transthyretin
- ★ MW, early dementia
- Magnetic fields, dementia
- Modern life, younger dementia
- Pulsed EMF increases b. amyloid
- Increased a beta, electrical workers
- Full body EMF, Memory, Alzheimer's
- 900 MHz, beta amyloid, other toxins
- ELF may increase neurodegeneration
- AD, EMF, Mechanisms and Prevention
- ★ Risk factors for dementia include EMF

Occupations with EMF risk

Electric utility workers
Railway workers
Telephone workers
Machinists
Welders
Carpenters
Seamstresses
Dressmakers
Tailors

Neurodegeneration and occupational risks



- Alzheimer's disease
- Increased dementia
- 3 studies of worker risk
- Occupational exposures
- Environmental risk factors
- Occupational MF exposures
- MF exposures, electrical workers
- Occupational histories, HMO patients
- ELF-EMF, AD and neurodegenerative disease
- Swedish twins, work exposures, dementia, ELF

- Is EHS a Pre-AD State?
- ★ Dr. Martin Blank

Blood flow, barrier and EMF studies

- Mix of effects
- Barrier damage
- Prefrontal blood flow
- Reduced local blood flow
- Disrupted cerebral blood flow
- Altered permeability of b/b barrier

Mix with toxins

- Atrazine, ELF, mast cells
- EMF and metals in mouth
- Mercury release and cellphones

Brain structure and EMF studies

- Reduced neurites
- Microglial activation
- MW/RF, MDA, brain
- ELF, cortical neurons, increased ROS
- MW/RF, mitochondrial DNA, 8-OH-dG
- ELF, increased MDA, decreased melatonin activity

Home: Oscillatorium
Newest version this map
Date of this update: 10-29-17

"Several mechanisms have been proposed and studied in order to explain ELF-EMF potential actions on biological systems, involving melatonin and biosynthetic enzymes in the pineal gland (melatonin hypothesis), oxidative stress, or Ca2+ efflux (release of calcium ions from a sample into a surrounding solution) in immune system cells and neurons. Other potential pathways, which may be involved in the relationship between ELF-EMF and AD include apoptosis and necrosis in brain cells, effects on biomagnetic particles reported in the human brain or differential levels of electrosensibility among the general population, but their potential nexus with AD remain unknown."
Ana Garcia, et al