

MITIGATION OF ELECTRICAL POLLUTION IN THE HOME
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ABSTRACT

The electrical pollution that is mitigated is the electric fields produced by the ubiquitous Marconi Transmitters present in today's high technology environment. Individuals should be able to determine if this mitigation in their home is beneficial to them.

THE MITIGATION OF ELECTRICAL POLLUTION IN THE HOME

The electrical pollution considered in this report is electrostatic fields that vary rapidly in a random or noiselike pattern. When Guglielmo Marconi transmitted wireless signals from Pophu, England to St. John's, New Foundland on December 12, 1901 he used a spark transmitter that generated fields of this type. The antenna and the ground were connected to the spark gap. The wireless signals used today are much more orderly, since this is the basic way to enable multiple communication channels that share a common medium [1]. These modem signals have sinusoidal waveforms that are similar to those in the electrical distribution systems. However, there are millions of transmitters in the electrical power system that are the equivalent of Marconi's transmitter, and the power distribution wires are the antennas and grounds that couple these noiselike signals to humans. An inexpensive hand held AM radio receiver will detect these signals. Tune the receiver to the lowest frequency on the dial (about 500 kilohertz) which is below the lowest frequency broadcast station, turn up the volume, and you will hear a noise. As the receiver comes closer to a transmitter, the noise becomes louder. Try it near dimmer switches at various settings, personal computer displays and keyboards, fax machines, microwave ovens, electronic telephones, high efficiency fluorescent lamp bulbs, video tape recorders, and hand held hair dryers. The effects on humans depend on the path the currents produced by these fields takes through the humans, on the sensitivity of the individual, and on the amplitude, waveform, and duration of the fields. There is strong evidence that these currents may cause cancers, but this report is concerned with reducing the symptoms that humans can directly observe in themselves, such as poor short-term memory, chronic fatigue, depression, nausea, and rashes.

The Marconi Transmitters may be there because of the customer, or they may be there because of the utility. Some of the transmitters belonging to the customer are

- Hair dryers
- Dimmer switches
- Electronic transformers in low voltage halogen reading lamps
- Loose electrical connections
- High efficiency electronic systems

Some transmitters belonging to the utility are

- Switches controlling the power factor correction capacitors
- Tap switches on transformers for voltage regulation
- Deteriorated wires and connectors

There are transmitters which belong to other customers that are connected by the utility distribution system to your house. One such case is the strobe lights located on radio towers for aircraft warning purposes. The signals generated by these transmitters can travel considerable distances. The electric fields produced by these noise voltages between the power wires in a home can be reduced by lowering the impedance between the wires. Connecting a large capacitance between the wires has been effective in many cases in reducing the symptoms experienced by the occupants of the home. The capacitances used in these tests were about 200 microfarads across each 120 Volt circuit in the usual 240 Volt utility distribution system. In most cases these

were installed at the main distribution in the home by a licensed electrician. Appendix A describes how an individual can evaluate the effectiveness of this mitigation technique on their symptoms.

APPENDIX A

An individual can install a capacitor across the 120 Volt circuit by electrically connecting it to a plug that is inserted into a 120 Volt electrical outlet, which is the type used in homes for appliances such as lamps, television sets, toasters, etc. A good arrangement for individuals is to plug in ten to twenty 20 microfarad motor run AC capacitors into a number of different outlets. Suppliers of these capacitors can be found in the telephone yellow pages under electric motors and/or electrical supplies. The newer A.C. dry film capacitors in epoxy cases are better for this use by nonprofessionals than the older style oil filled capacitors in metal cases, but either will mitigate the pollution. The mitigation is somewhat more effective if the capacitors are plugged into outlets used for appliances that individuals are close to for extended periods of time, such as reading lamps, radios and television receivers, and kitchen appliances. Particular attention should be paid to safety.

There should be no exposed electrical conductors.

The components should be in an enclosure that prevents children from tampering with the device.

Whenever a capacitor is disconnected from the outlet, it may have energy stored in it which will remain there for hours. A 27 kilohm 2 watt resistor permanently connected directly across the 20-microfarad capacitor will remove the stored energy within a few seconds without wasting appreciable power while the capacitor is connected to the outlet. Some sparking may occur at the plug when the capacitor is connected. This is normal.



Mitigating Electrical Pollution Carried Into Your Home On Your AC Power Lines: One Approach

You can implement the Graham power filtering technique with a few commonly available components and some hand tools.

1: AC Motor Starting Capacitors: I selected for my own use the metal can units shown in the photos at the left. These are rated at 50 μF 370 VAC (The VAC rating relates to the quality of internal insulation used in construction; these are fine for use on 120 VAC installations & applications, too. I ordered ten of these from a supplier listing them on Ebay. These have a case that is ~ 2 " in diameter by a little over 4" in height; the size is only significant when looking for a suitable insulating cap to cover the contacts.

2: Rubber insulating Safety Covers : The rubber caps used to cover Bearing Buddy trailer axle bearings are sold by auto and marine supply stores; The size listed as 1.98" I.D. work well as insulating safety covers for these Electro-Smog filtering capacitors.

3: Cable Ties : Used to secure the rubber safety covers in place

4: Two prong AC plug & cord, ~ 18 " long : Sometimes referred to as a SPT2 cord; you can buy an inexpensive two wire extension cord at a dollar store, etc., and cut away what you don't need.

5: Fully Insulated female 1/4" Spade Lug crimp-on connectors; these are available from electrical supply sections at Home Depot or Lowes, or can optionally be ordered on line.

TOOLS & PROCEDURE

STEP A : Use Side Cutters : First used to cut wire with plug to desired length = ~18"

STEP B : Use Side Cutters : Remove extra center metal terminals on the capacitor so that the insulated terminals & the outer spade lugs which they will be attached to can fold into the center past each other for a lower profile installation.

STEP C: Use Side Cutters : to cut a small hole in the insulating cover close to the top edge for the wire to pass through. (A sharp knife might also be used for cutting the hole.)

STEP C : Use Pliers to bend extra side terminals back out of the way slightly, etc. as necessary

STEP D : Use Terminal Crimping (and wire insulation stripping) Tool : Strip ~5/16" of insulation from the cut ends of the wires after separating the two wires. Insert the wires through the small hole you cut through the cover, then install and crimp on the fully insulated female spade lug terminal connectors on the stripped ends of the wires.

STEP E : Install the connectors on the two outer spade lugs. These should be a snug fit; use pliers to get them fully seated if necessary.

STEP F : Bend the two terminal connectors & their lugs down so they fit past each other in the center area.

OPTION: Add Tachionized / Activated crystalline discs / devices on top of the capacitor as shown.

STEP G : Slip cover cap in place. Use Cable ties to secure the cover in place; use two connected end to end if one is not long enough to reach around the cap.

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Up to ten 50 uF filtering capacitors or up to twenty 20mH filtering capacitors may be used in various locations throughout a house. Installing them close to devices which may be generating RF or noise signals is a good practice. If you unplug these electro-smog filtering capacitors later, be sure to avoid touching the plug contacts until you have discharged any charge by shorting the contacts with an insulated handled metal tool.