

Natural Radio

News, Comments and Letters About Natural Radio

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Again, we've had a great fall in Illinois and I took advantage of the nice fall weather this weekend to string a new long wire antenna. My original one snapped this spring when we brought a tree down, and now that winter is coming, I didn't want to be without a VLF antenna. This one is about 25 or 30 ft. longer than the previous antenna and a quick test produced an extremely strong signal from DKB in DeKalb which is about 50 miles away, so I'm back in business at least for VLF reception. All that's left is to remove some tree branches that have become intertwined with my multi-band vertical and all the outside radio work is done for the year.

Despite predictions that stated otherwise, the sun released an X1 flare earlier yesterday, and an M2 flare this morning. There has been lots of geomagnetic activity due to favorably positioned coronal holes. The VLF_Group list has been alive with reports of good whistler activity.

LF Radiation & Biology - There was a inquiry this week on the VLF_Group list asking about the effects of ELF waves on human biology and quoting the usual reports on HAARP and other clandestine "mind control" projects including GWEN. A quick response from Dennis Gallagher of NASA quickly dispensed these myths in a most diplomatic way.

I later did a Google search on "Ground Wave Emergency Network" to find out when it was decommissioned, and the first 10 or 15 hits produced conspiracy and mind control articles regarding GWEN! I finally found an article that indicated that GWEN had been decommissioned several years ago and repurposed by the Department of Transportation for Differential GPS – these stations transmit a signal to increase the accuracy of a GPS receiver to a few feet.

Going beyond the conspiracy theories, I think there is a valid concern for the effects of RF radiation on the human physiology. Here's some information on the effects of electromagnetic radiation, and specifically on ELF radiation.

Electromagnetic Radiation is classified in two types – ionizing and non-ionizing. Ionizing radiation has the ability break chemical bonds and produce ions. For example, ultraviolet radiation from the sun creates the various layers of the ionosphere by stripping electrons from the atoms present in the outer atmosphere. Electromagnetic radiation becomes ionizing somewhere in the ultraviolet range and extends to all frequencies above that range. (UV, x-rays, gamma rays).

Ionizing radiation has been well studied and its effects well documented. It is harmful because it can cause chemical damage to cells and our DNA.

Non-ionizing radiation is harmful because of its ability to cause heating in human tissue. Of course under controlled conditions this is beneficial. An infrared lamp can ease sore muscles. I recently had gum surgery done with a surgical dental device known as Electro-Surg. It cuts away tissue with RF energy and produces little bleeding. After the Novocain wore off, I expected to be quite sore, but there was virtually no pain or discomfort.

However, uncontrolled tissue heating can be harmful. There has been considerable interest in the effects of RF radiation on the human body in the past few years. Those of you who are hams know that amateur radio stations are now required to comply with FCC prescribed radiation limits. Cell phones are linked to brain cancer and other maladies. We are just at the beginning of the investigation and when you don't know a lot, it's better to err on the side of increased caution.

In the ELF range, however, heating is not the dominant problem, but currents that can be induced in the body by a moving magnetic field. If you are considering ELF signals, anyone who has tried Natural Radio listening can confirm that the loudest signals come from the 50 or 60 Hertz power mains. Unless you are sitting on the antenna, all other signals pale compared to power line radiation. OSHA and other agencies realize this and studies have been and are being done to test for the damaging effects of power line radiation. The results are at best inconclusive, though several have shown positive correlation with disease.

The studies that have shown positive correlation between power line and other ELF radiation and harmful effects on human physiology have been epidemiological studies. An epidemiological study uses statistics to draw correlations between certain human activities and disease. This is opposed to a laboratory study where all conditions are tightly controlled. For example, several epidemiological studies have showed a correlation between workers exposed to higher than normal levels of power line radiation and an increased incidence of leukemia. But since this is not a tightly controlled study, maybe the increased incidence of leukemia is due to some chemical these workers are exposed to and not ELF radiation.

Another study shows a correlation between suicide rate and exposure to ELF fields. The hypothesis here is that ELF fields may suppress the production of melatonin and make these people more prone to depression. Depressed people have a higher suicide rate than non-depressed people and thus the correlation. Interestingly, the suppression of melatonin production is also a hypothesis for the increase in brain cancer and leukemia linked to ELF exposure in some studies.

But there is no smoking gun. While the correlations between disease and ELF exposure have been significant, they are slight. Some studies show no correlation at all, and few controlled laboratory studies have been done. This is an emerging area of study and much research is ongoing. This is definitely an area to keep informed on as new information is being discovered every day.

Since we aren't sure about ELF radiation yet, it is best to be cautious. For those of you over 50, you may remember the X-Ray machines in show stores where you pushed a

button, stuck your feet in and then looked down at a fluoroscope to see the fit of your shoes against your foot bones. I have copies of electronics experimenter's books from the 30's and 40's that show you how to experiment with an X-Ray tube and build a carbon arc lamp with no mention of the radiation danger of either. We just weren't aware of the danger back then.

For more information see the Department of Labor site on ELF radiation at <http://www.osha-slc.gov/SLTC/elfradiation/index.html>

The Politics of Space Weather - This column is not really the place for politics, but I couldn't let this one go by. Although authorizing \$30 million to advertise the new \$20. currency, the Senate Appropriations Committee, on September 5, passed a bill that would eliminate all funding for the Space Environment Center. This would put all the SEC's archives of data in jeopardy and put the various satellite programs in limbo. Obviously, it would also be the end of the Space Weather pages on the web.

The congressional version of the bill would cut the funding to \$5.2 million - 40% below the FY02. The president has asked for \$8.3 million, which is in line with the current budget.

For the good of our society, we need to elect some senators and congressmen that understand science and technical issues. Technological illiterates cannot make intelligent decisions on many of the issues that are affecting us now and in the future. If we don't start providing an good science and technology background to our young people, we will either soon develop a two class society ruled by technocrats, or return to the dark ages.

I will now descend from my soapbox.

On the Web – Renato Romero informs us that his website has some important updates. Check it out at <http://www.vlf.it/>.

The VLF_Group mail list provides lively discussions on Natural Radio Topics and reports on current conditions. Subscribe by sending a blank e-mail to (VLF_Group-subscribe@yahoogroups.com) from the e-mail account you wish to receive the list at. Daily digest form is available if you prefer that over individual emails.