ABOUT THE NON-IONIZING IRRADIATION OF THE POPULATION

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Abstract: *As a consequence of the interaction between the two facets of matter, field and substance, the properties of the substance could be so much modified that physical systems formed up by the constituents of the substance, atoms and molecules, could reach states that are very far from equilibrium. In these states, the evolution of the atoms and molecules becomes uncontrollable. In this paper, we discuss about some aspects of the interaction between the electromagnetic field generated by some electronic equipment and the users, physical systems made up by atoms and molecules which interact between them giving birth to a new state. Usually these systems are initially at equilibrium and they lose this equilibrium because of this interaction.*
Keywords: *emissions, irradiation, electromagnetic waves, radar, HAARP*

INTRODUCTION

In the previous decades, the technology has developed many branches without taking into consideration its impact on the population health. For so long the attention has been focused on problems such as the emissions of vehicles or the waste of paper. Few have been said about the electromagnetic bath in which we are sunk permanently. The electromagnetic hypersensitivity syndrome is hard to be attenuated. The rights of persons affected by this syndrome is in conflict with the other person's rights to communicate or to do business. The technological revolution has led to the emergence of the functional impairment and environmental disease. The electromagnetic radiations, which we are talking about, although not capable of ionizing, have effects on human body similar to the effects given by high frequency waves. The electromagnetic wave carry an amount of energy proportional to the wave's frequency according to the formula $E = h \upsilon$, where E is the wave's energy, h is the Planck's constant ($6.6256*10^{-34}$ [J s]) and υ is the wave's frequency. The electromagnetic spectrum is shown in the Figure 1[*].

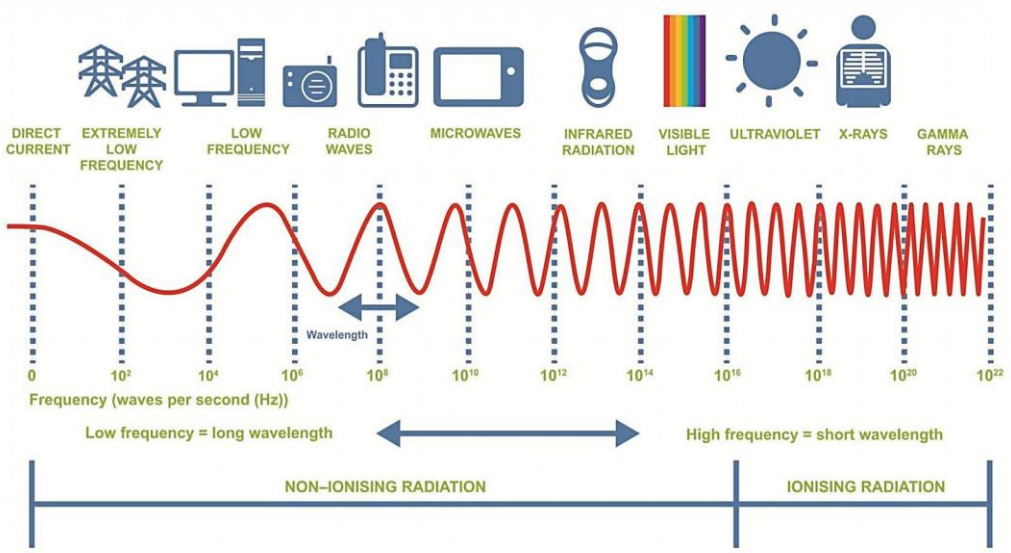

Figure 1. Electromagnetic spectrum

This figure shows devices or phenomena corresponding to each frequency domain. The visible spectrum is very thin. High frequency waves are capable of ionizing while low frequency waves are not. Electromagnetic waves become even more dangerous when phenomena such as interference or diffraction come into play. The electromagnetic hypersensitivity (EMS) is affecting more and more people (and of course animals). Some examples of devices that emit electromagnetic waves include cell phones, mobile phone stations, wireless routers, microwave ovens, industrial technologies for thermal treatment, remote controls, telemeters, electric networks and transformers, radio relays and translators, civil and military devices and radars. It has been found out that the most exposed people are those that live in highly crowded settlements and those that live in high altitude areas.

EXPERIMENTAL

In the following we will focus on radars and power radio stations. The presented analysis is based on an experimental study which was conducted in the mountain areas where the development of mining has increased the exposure of active and passive population to electromagnetic waves. Initially we have studied the effect of radiation produced by radars on different animal species, especially on the population that lives in mountain areas. The observations have been made in the region of Poiana Rusca Mountains where there are many military bases at both high and low altitudes. Racket units have always been operational. Both military and civils are exposed to electromagnetic radiation.

We will start by discussing a study made at the weather station from Timisoara, where there is an observation post based on Radar. The weather radars, situated at high altitudes, work in different frequency ranges:

- W with 35-94 GHz for cloud detection
- K with 14-35 GHz for rain detection
- X with 10 GHz for snow detection

In Timisoara, the first installed radar, type MRL-2, produced by well-known military complex Diamond-Antei had started to work in 1978. This type of radar worked at a frequency of 9595 MHz, having an adjustable power in the interval 300 KW- 1MW and operating on a range up to 250 Km.In 1990 the device has been replaced by an advanced version - MRL5 which emits in intervals of 1-2 μSec, with a repetition of 250-1000 Hz. In Figure 2 a scheme of MRL5 (a) and a picture took from beneath are shown (b). The measurements are based on the Doppler Effect.

(a) (b)

Figure 2. MRL5 Radar

In 2004, after joining SIMIN program, at Timisoara has been brought the WSR-98 D radar, produced by Lockeed Martin company which is shown in Figure 3. This works in the range S and emits on a frequency of 2935 [MHz]. The radar network acquires data in 3D with a period of 6 minutes. After their processing, the data are sent to Bucharest every 10 minutes. The clouds are detected in a range up to 460 km and their velocity is measured in a range up to 230 km. The impulses are sent with a frequency between 318 - 452 and 1304 pulses/sec. The antenna, with a diameter of 9 m, mounted in an radom, gives an amplification of 95 [dB]. The azimuth and elevation angles are equal to 34.5°/sec.

(a) (b)

Figure 3. WSR 98 D radar

Starting from 1999, other types of radars have been developed by American and Chinese researchers and have been intensively exported. These new types of radars pose problems to their operators and to the local people. Many measurements have been made and has been found out that the power density lies in the range 0.340-14.00 [mW/m^2] and that the intensity of the electric field lies in the range 0.1-0.4 [V/m]. These values do not meet the standards SBM 2003, which states that above 1 [mW/ m^2] is an extreme abnormality, DIN/VDE 0848 – [10-100 W/ m^2] and STOA 0.1 [mW/ m^2]. As it can be seen, the values of these standards are very diverse depending on which institution proposed the standard. Some other standards are 1-10μW/ m^2 (Salzburg), or natural background 1 [μW/m^2]. In our country there are some other standards [**]. For the power density it is accepted the value 50 W/m^2 for the range 2-300 GHz, but even 1 [mW/m^2] is a value that affects both medical devices and the crew's immune system. In the areas where there are radars there can be detected phenomena of interference with waves coming from other sources, situated in proximity or not, or with waves that are reflected by the buildings. The same phenomena can be observed in hospitals in which there are high precision devices. Taking into consideration the fact that the antenna works at positive azimuth angles, we consider that the characteristic transmission lobes create electromagnetic fields that are hard to be controlled.

If for the military crew there are some "derogations", it is unfair for the civil population to be exposed uncontrollably to electromagnetic radiations. To avoid the exposure of the civil population there are some alternative solutions: modern radars with non-impulse antennas, locations as far as possible away from the areas with dense population, frequent and periodic measurements.

Apart from the electromagnetic field created by the radars there are, though, some other types of sources of electromagnetic radiations which are hardly controllable, even at the source. Although fixed antennas are used, most of them situated at the ground level, after the signal has reached the superior levels of the atmosphere, their dispersion is uncontrollable. The reflections and the refractions are those that decide the directions of electromagnetic waves to Earth.

Even since 1940 there were developed programs to control the nature(the Fury of the Nature), after which in 1960 there has been developed a program to spread in the clouds silver particles, followed by some larger projects under military aid in 1970-1990. We will present some examples:

The HAARP equipment - The High Frequency Active Auroral Research Program, has been developed since 1990, initially with powers of 3.6 [MW] reaching powers of 5.8 [GW]. The working frequencies are in the range 2.5-10 [MHz]. In Figure 4 it is shown a part of a HAARP network (a), and a detail (b).

(a) (b)

Figure 4. The HAARP equipment

The project had been developed continuously until 2013 when it has been declared closed because of the danger it was posing to the health of those that lived in the proximity but it was closed only temporary. Through this program there have been developed many bases on the USA's territory and on other countries' territory.

In the previous years on the Romanian coast there have been brought such devices. There have been mounted in the Corbu area, a location that is inaccessible to the public in many respects: the Midia Polygon, the ramps for rackets, The Plant for Hard and Radioactive Metals, Grindul Chituc and now the HAARP base. The access of the public is limited for tourists because the area has been declared natural reservation. In Figure 5 (a) it is shown an image from that area and in Figure 5(b) it is shown in detail an installation.

(a) (b)

Figure 5. The equipment at Navodari

The region has been unspoiled and in the region there is a military base so that the access of the civilians has been restricted. Now the town halls put more and more restriction for the public access. These measures should have been adopted straightaway after 1990 because the region has a high degree of radioactive contamination. Indeed, this contamination is favorable for the functionality of the system because it guarantees a good local ionization of the atmosphere.

The soviet equivalent of the American system is SURA - Ionospheric Heating Facility. Its beginning date back in 1970 but its functioning at full parameters begins only in 1981. The devices are designed to work in the range 4.5-9.3 MHz and work with emission powers up to 190 MW. In Figure 6(a) it is shown an overview and in Figure 6(b) it is shown a detailed image of the considered system.

(a) (b)

Figure 6. The SURA radar

After 1990, due to the ease of the tension between Russians and Americans, the Russian specialists publish many of their experiments results. It seems that this technology, at least in respect of electro supply and emission systems, is more robust. In Figure 7 there are shown details of the SURA devices.

Figure 7. The SURA radar

The study about a radio-electronic war and about climate change were developed very fast, after the great experiments done by Americans and followed by Russians. Around 2007 there has been announced that the first positive results concerning the precipitations (the snow creation, the prevention of the drought, the prevention of the extreme phenomena). Initially the research had been focused on repeating previous experiments. As soon as they started to control the technology, they have diversified the activities in the military field.

EISKAT1 EISKAT Tromso 10 Andoya

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Kaira
Figure 8

Another program is EISCAT - European Incoherent Scatter Scientific Association, which started as an European program and became international and at which countries like Norway, Sweden, Finland, Japan, China, England and Germany have joined. The devices used work on many frequencies and powers and have whole range of types:- radars on UHF - 929,5 MHz, localized in Norway, Sweden, Finland, work since 1981;- VHF radars - 224 MHz, localized in Norway, work since 1985;- ESR radars 500 MHz, localized in north Island, work since 1986;- EROS control system, works in real-time- related systems - IS Radar Factsheet, Scatter radar, CEDAR(convey coordinator). In Figure 8 such devices are shown.

EICSAT program had been initiated in 1973, in 1975 there had been formed the first concrete group and in 2008 3D is used. Now, the working frequencies are:

- VHFTx - 222.8-225,4 MHz; 1.5 MW in emission;
- UHFTx – 926,6–930,5 MHz; 2.0 MW in emission;
- UHFRx – 925,0–931,5 MHz;
- UHFRx – 929,0–939,5 MHz;
- UHFTx – 498,0–502,0 MHz; 1.0 MW in emission;
- HF – 4,0–8,0 MHz; 2 x 100 KW in emission.

This program is focused more on research on cosmic space. In reply Japan came with its own research plan, using a radar - MU Radar, which works with powers up to 1 [MW].

All these types of applications are dangerous for the animal kingdom and vegetation and especially for humans because these devices emit continuously and all electromagnetic waves reflect back to Earth. Having high power, the waves will propagate under the continental crust. From here there is no long way to the most diverse applications. The most scary myths could become reality. But in any type of application there are side effects. If the main effects are hard to be controlled, what about the side effects? We remind just some fields in which the phenomena are applicable: climate changes up to the level of climate war, the blocking of some electronic devices used for telecommunications in water or in air up to electronic war, the use of high frequency impulses could perturb the unstable equilibrium of the plate tectonics, leading to a geologic war.

What is even worse is the fact that human brain can be attacked or the fact that the ionosphere could be destroyed, which would lead to an unimaginable end.

HAARP system is not the only application. Now all powerful states are concerned about this phenomenon for attack, counterattack or defense. Let us take the example of CCCP-Soviet Union, where now there can be identified many installations, some abandoned, some still working. In Figure 9 and Figure 10 are shown such installations.

Figure 9

Figure 10

Now it is almost impossible to take into account the stations used in so many similar programs. Then, many devices can be coupled to these programs, through a system programmed to work for a very short time. There have been edited maps in which are localized the devices. Such an example, for the HAARP system, is shown in Figure 11

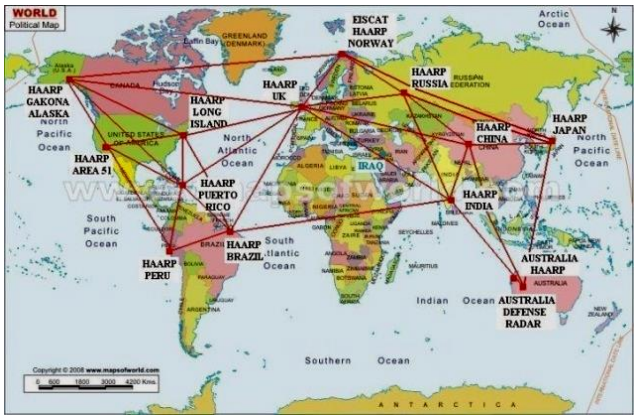

Figure 11

If we study the map of Romania where there are highlighted the areas that are swept by the beams sent by meteorological radars, we will see that not only radars (meteorological, military, aviation, AA artillery) give birth to an oversaturated field of Electromagnetic radio waves. In Figure 12 it is shown this situation.

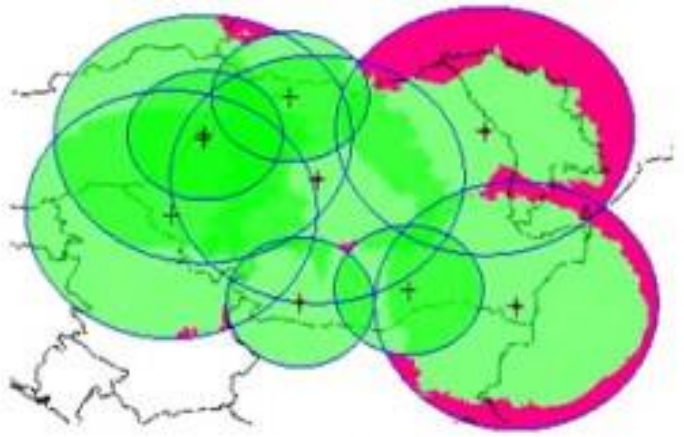

Figure 12. Radar cover for Romania

CONCLUSIONS

As it can be seen, on Earth there is no region with "radio quietness". If at these radio waves we add the effects of the radars and the repeaters (mobile and fixed telephony, professional radio communications), the satellite networks for GPS systems (American, Russian), the radio emitters (for civil and military communications, radio diffusion, mobile and portable stations), the technical applications in VHF and UHF (tele measurement, supervision), we find out that we are in a permanent uncontrolled bathtub of electromagnetic waves. From the measurements that we have done we have found out that there are average levels way above the normative accepted values (which are characteristic to many countries). From the natural background level 1 [$\mu W/m^2$] up to 100 [W/m^2] there is, though, an appreciable difference.

But the immune system can be perturbed with just 1 [mW/m^2]. The medical devices can be perturbed by values of 1 [$\mu W/m^2$]. When it comes to medical devices it is absolutely necessary to think about all types of stimulators, especially those cardiac, which expose its users to high risks.

Now for ionizing radiation (type alfa, beta, gamma, X-ray) there are portable dosimeters with alarm systems and memory for storing the measurements. For electromagnetic radiations there are small devices that measure but until now there has been no interest in them (they are used only professionally).

The most aware about the existence of the electromagnetic waves are the radio amateurs. They work in a broad spectrum (the professional devices of radio communications works at predetermined frequencies). Many of their

allocated frequency bands are perturbed continuously or randomly. Also, there are problems with the propagation especially in those places where the reflection of the electromagnetic waves in the high atmosphere is used. Most of the times resonance phenomena come into play resulted from the superposition of some electromagnetic waves of frequencies or harmonics equal with those resulted from various emitters.

References

[*]http://www.scampstudy.org/wordpress/wp-content/uploads/2014/05/The-electromagnetic-spectrum1.pdf

[**] Icnirp Guidelines For Limiting Exposure To Time-Varying Electric, Magnetic And Electromagnetic Fields (Up To 300 Ghz)

COUNCIL RECOMMENDATION of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

Exposure Standards Applicable in Europe and Elsewhere - Environment & Society Working Group, March 2006

BS-EN-50413 -Basic standard on measurement and calculation procedures for human exposure to electric, magnetic and electromagnetic fields(0 Hz - 300 GHz)-2008 EDITION/AM A1

HG1136/2006 - Hotararea nr. 1136 din 30/08/2006 privind cerintele minime de securitate si sanatate referitoare la expunerea lucratorilor la riscuri generate de campuri electromagnetice

ORDIN nr. 1.193 din 29 septembrie 2006 pentru aprobarea Normelor privind limitarea expunerii populaţiei generale la câmpuri electromagnetice de la 0 Hz la 300 GHz

Ordonanţa de urgenţă a Guvernului nr.79/2002 privind cadrul general de reglementare a comunicaţiilor, aprobată, cu modificări şi completări, prin Legea nr.591/2002, cu modificările şi completările ulterioare

HG 982/2007 - privind compatibilitatea electromagnetică

Ordinul nr. 31/2011 privind stabilirea responsabilităţilor pentru asigurarea compatibilităţii electromagnetice în Ministerul Apărării Naţionale

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