

Exciting Possibilities in Pulsed Intense Magnetic Field Therapy — A Physicist's View

By Gary Wade, Scientific Advisor

Imagine devices that can disable and destroy microorganisms — viruses, bacteria and fungi — by means of a pulsed, intense, magnetic field!

They are not devices for the distant future. They are for today! Already several different pulsed magnetic field instruments are being used in the alternative health field.

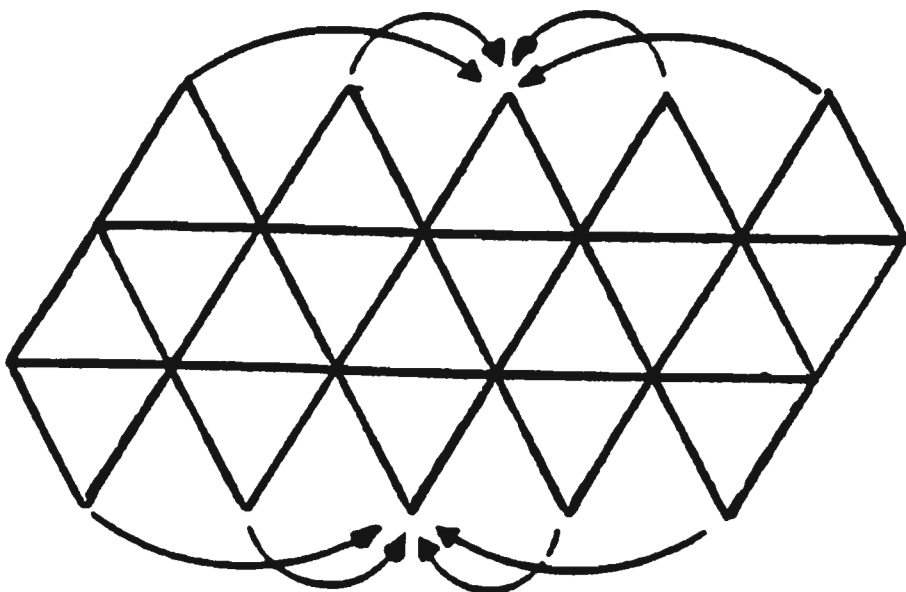
Many claims and suggestions are being made for and about them. Let's look into their validity. Let's also look at a simple device that uses a strong permanent magnet and an oscillating magnetic field generated by a coil of wire. And, in addition, let's consider what broad band ultrasound* directed inside animal and human tissue can do and how it can destroy microorganisms.

During the 1920's and 30's, Dr. Royal Raymond Rife discovered that every microorganism has at least one frequency of ultrasound that at ultra-low intensity, can easily disable and/or destroy it. Strange as this may seem, it is easy to understand when you learn more about the substructures of microorganisms.^{1,2}

All microorganisms apparently have protein clump structures which are periodically spaced and elastically coupled. They are capable of supporting resonant, standing, mechanical waves. Roughly half of the viruses that attack humans are lipid coated.

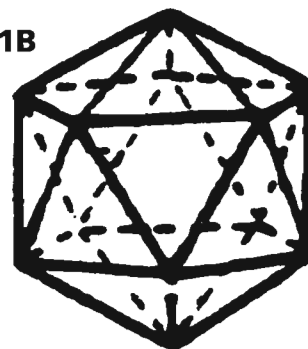
Let's consider the outer structure (capsid coat) of the common lipid-coated viruses that attack human beings. Figures 1A and B illustrate their geometrical construction features. The structure in Figure 1B is called an icosahedral. As shown in Figure 1A, it is composed of twenty identical equilateral triangles. Figure 2A and B illustrate two specific examples of

have been formed that has periodically spaced, elastically coupled, protein clumps that close back on themselves. As previously stated these closed-on-themselves, periodically spaced protein structures can support resonant standing mechanical waves. Figure 3 shows several examples of these periodically spaced closed structures found on the capsid coats formed from



virus capsid coats. The dark disks in Figures 2A and B represent individual single protein molecule spheroids. These spheroidal protein molecules are weakly bonded to each other. This spheroidal protein structure is elastic. If the protein capsid coats illustrated in Figure 2A and B are folded up to form the completed virus capsid coat illustrated in Figure 1B, a structure will

Figure 1B



* Broadband ultrasound — A continuum of ultrasound frequencies covering a large range of ultrasound frequencies. Ultrasound is generally considered to be any frequency of sound (mechanical vibration) above twenty thousand oscillations per second.

the examples of Figures 2A and B. The bond between these adjacent protein molecules are relatively weak. This means that if the amplitude (displacement from rest position) of the protein molecules becomes too large during mechanical oscillation, the physical/chemical bonds between the adjacent molecules rupture and this essential microbe structure is destroyed. An ultrasound generator

can supply the mechanical oscillations. Figure 4A shows the periodically spaced closed structure of Figure 3A laid out linearly for ease of graphic display. Figure 4B, C, and D illustrate some of the standing mechanical wave oscillation modes that the periodically spaced closed structure of Figure 3A can support. The standing wave mode illustrated in Figure 4B where the adjacent protein clumps oscillate

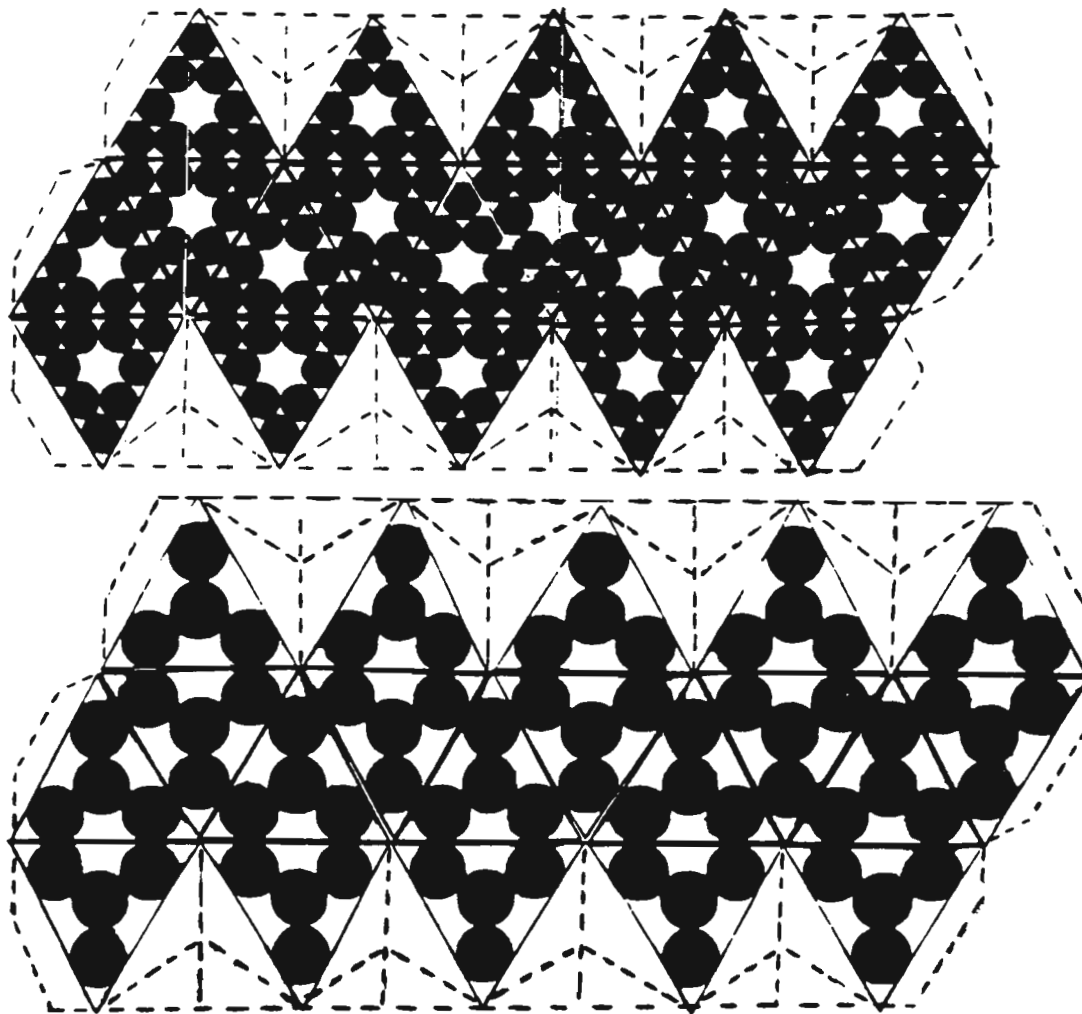
180 degrees out of phase is the most stressful oscillation mode. When adjacent protein clumps oscillate 180 degrees out of phase, one protein clump is moving upward while its adjacent clumps are moving downward and vice versa. At maximum displacement of the protein clumps from their equilibrium position, the stress at where the adjacent protein clumps are joined become a maximum. If the stress becomes large enough, the bonding between adjacent protein clumps breaks down and the essential or critical structure for holding and delivering the virus genetic material is critically damaged or destroyed. This means the virus cannot infect a new cell. Also, viruses that are forming and budding off of infected cells can be destroyed by this same method. This destruction/disintegration of forming and budding off viruses leaves holes in the infected cell's membrane, which can be fatal to the infected cell, which is actively producing viruses.

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Enter the Pulsed Magnetic Field

At this point you may be wondering how intense pulsed magnetic fields can produce the mechanical oscillations at ultrasound frequencies needed to destroy virus capsid coats as well as other periodically spaced, elastically coupled, and closed on themselves

Figures 2A and 2B



Instructions for Assembly of the Figures 2A and 2B

- 1) Enlarge the figures 122 percent two times. This will give almost a page full of virus coat.
- 2) Make another copy of the last enlargement onto thick cardboard copy paper. You may have to look around to find the right copy machine for this.
- 3) Cut along all dashed lines on the cardboard copy. You should now have something that looks like Figure 1A except for extra tabs for structural support for the assemble model.
- 4) Taking a straight edge ruler and lining its edge up congruent with all of the equilateral triangle facet edges as those shown in Figures 2A and B, fold the cardboard over the ruler edge until a 90 degree fold angle is achieved, while folding away from the faces shown in Figures 2A and B.
- 5) Begin folding the model together by lining up adjacent triangle edges and then bringing them with scotch tape to the adjacent triangle faces.

critical structures in microorganisms in general.

Consider Figure 5, which illustrates the type of motion a charged particle executes when it is placed in a crossed electric and magnetic field. In Figure 5 the magnetic field is at right angles to the plane of the page (perpendicular) and the electric field is in the plane of the page. If the charged particle released from rest in such a crossed magnetic and electric field is a proton embedded in water, then as the proton attempts to execute the motion depicted in Figure 6, it must collide with/move about adjacent water molecules. It does this moving about of adjacent water molecules in a periodic fashion as depicted in Figure 5. This periodic moving back and forth of water molecules is the generation of ultrasound. Regular water at room temperature has approximately one in a million water molecules at any instant in time disassociated into a hydroxyl ion (OH⁻) and a hydronium ion (H⁺). Both the hydroxyl and the hydronium ion in water will attempt to execute the motion illustrated in Figure 5, if exposed to the crossed electric and magnetic fields. However, the hydronium ion will execute the motion at a much higher rate (frequency) than the hydroxyl ion because of its much smaller effective mass.

For our more technically trained readers, I have written the equations that describe the frequency of ultrasound generated by the ions oscillating in the crossed electric and magnetic field, along with the amplitude of oscillation in a separate technical section at the end of the article.

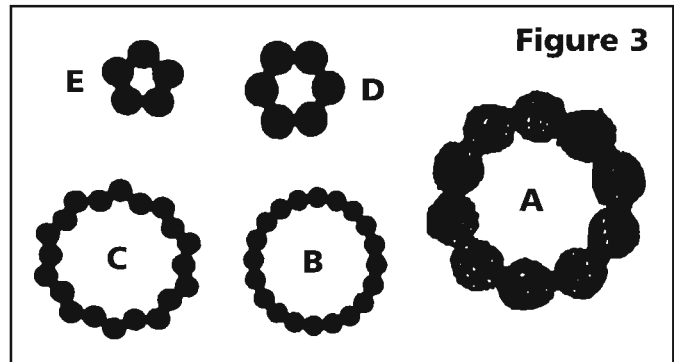
Question: How do you get this crossed electric and magnetic field in water?

Answer: You expose the water to a changing magnetic field strength. It is known from experiment and theory, that when a magnetic field at some location is changing in strength, an electric field is created with its direction at right angles to the direction of the existing magnetic field at that location. In other words a crossed

magnetic and electric field as illustrated in Figure 5.

The frequency of mechanical oscillation is directly proportional to the magnetic field strength. For example, if you increase the magnetic field strength by a factor of ten, then the frequency of ultrasound generated by the ion oscillation increases by a factor of ten. The amplitude (displacement) of oscillation is directly proportional to the electric field strength. The electric field strength is determined by how fast the magnetic field strength is changing. It is directly proportional to the instantaneous rate of change of the magnetic field strength. So, to have both higher frequencies of ultrasound generated

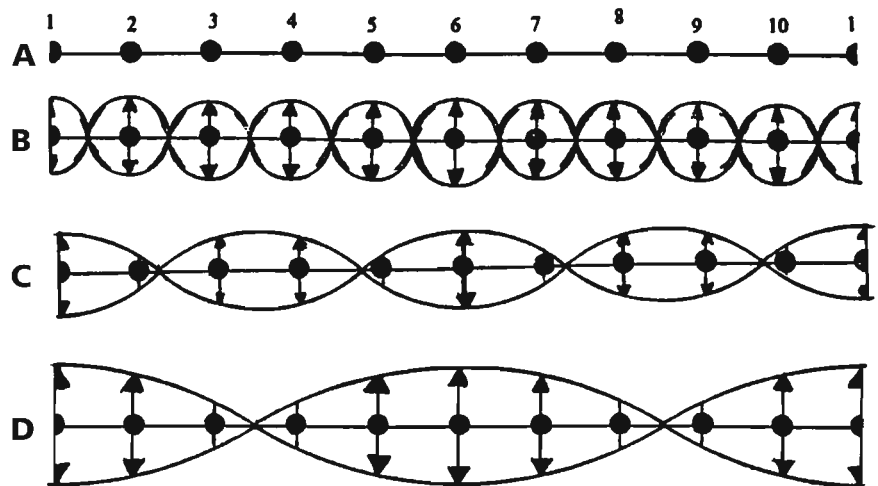
and for these frequencies to have high intensity/amplitude, the magnetic field at the location of interest must be both very strong and be changing its strength at a high rate. Hence, what is required is a high intensity pulsed mag-



netic field. This is achieved by rapidly discharging a high voltage capacitor through an appropriately designed wire coil.

If such a coil is placed on the surface of a person, when it has a high

Figures 4A, 4B, 4C and 4D



The dots labeled 1, 2, 3, etc. in Figure 4A represent the location of the center of mass of the spheroidal protein molecules of Figure 3A. The closed (circular) periodic protein clump structure of Figure 3A has been linearized (straightened out) for ease of graphing standing wave motion on the closed structure. The edge of the repeating envelope patterns in Figure 4B, C, and D demark the maximum displacement of the center of mass of the protein molecules clumps. At any one instance in time the centers of mass in each individual envelope pattern of 4B, C, and D are moving in the same direction. However, the centers of mass of adjacent envelopes are always going in opposite directions. In other words as the centers of mass in one envelope are going up the centers of mass in the adjacent envelope are going down and vice versa.

voltage capacitor discharge through it, it produces a continuum of magnetic field strength throughout the body and therefore a continuum of oscillation frequencies throughout the body along with a continuum of associated oscillation amplitudes. The highest ultrasound frequencies with also the highest displacement amplitudes will be generated by hydronium ions directly under where the coil is placed. The lowest frequencies and

Enter Charge Density Waves

Besides the broad band ultrasound generation, there are other phenomena occurring which can disable microbes. The transient electric field associated with the pulsed/oscillating magnetic field generates charge density waves in your body's electrolytic fluids (salt solutions). These charge density waves are traveling compressions and rarifications of the normal salt solution ion concentrations.

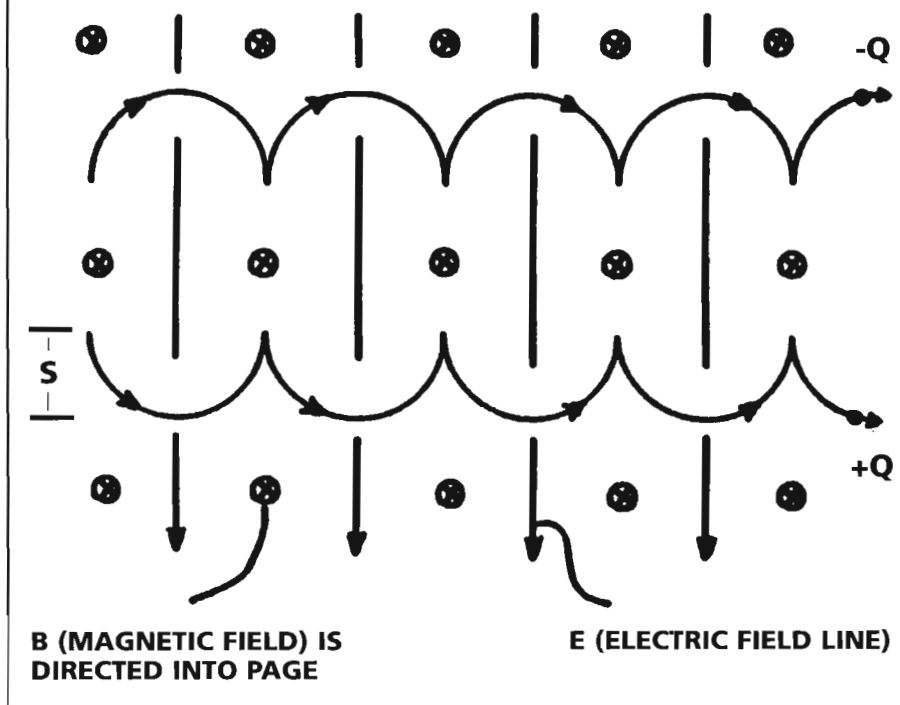
is being driven by the transient electric field, some ion types are being drawn in toward the dead skin layer while others are being forced away from the dead skin layer. This is a dynamic process, when those ions are pulled toward the dead skin layer, they leave behind a vacancy in their concentration which is filled in by adjacent ions of their own kind and in turn these ions leave a vacancy which is filled in by adjacent ions of their own kind. In this way a rarification wave of ion density is propagated away from the dipole layer generation region and into the body interior.

Similarly, when an ion type is forced away from the dead skin layer by the transient electric field, a compression (higher than normal concentration) of that ion is formed and this compression wave is also propagated into the body interior. Since these charge density waves are effectively traveling excesses of either positive or negative charge, they have traveling electric fields associated with them. These traveling electric fields can, when strong enough, denature/rearrange essential delicate protein structures on virus and bacterial surfaces.

One good example of this sort of an activity is the denaturing of the proteins of snake venom by charge density waves generated from shocking the snake bite region with high voltage discharges from the spark coil of a car.³ Another example, the HIV virus has a glycoprotein molecule known as gp-120 displayed on its surface. This protein is designed to match up and attach to a very specific protein CD4 on the target cell membrane. If the very specific shape, size, and charge configuration of the gp-120 is rearranged/changed by the transient electric field from the charge density wave, then gp-120 can not attach to CD4, and the virus can not infect the target cells. The virus is effectively destroyed. This displaying on the virus surface of a specific protein with a specific size, shape, and charge configuration to attach to a specific protein on the target cell is a standard virus attributer and therefore provides for a simple method to deactivate viruses.

Figure 5

PATH OF CHARGED PARTICLE IN CROSSED E AND B FIELDS



lowest amplitudes of oscillation will be at body locations farthest from the coil. Each time the high voltage capacitor is discharged through the coil, the electric current oscillates back and forth between the coil and the capacitor for approximately ten oscillations for most capacitor and coil combinations of interest. Each oscillation cycle being a little weaker than the previous one. During each of these ring down oscillations, a crossed electric and magnetic field is generated in animal tissue with the concurrent generation of broad band ultrasound, which can destroy the critical, periodically-spaced closed-on-themselves protein structures of microbes.

For example, when the transient electric field produced by the pulsed magnetic field is at some angle into or out of the animal's skin, the ions in the body fluids just under the dead skin layer will momentarily separate themselves into a dipole charge layer in such a way as to minimize the transient electric field at that location. That is the positive ions such as potassium, sodium, magnesium, calcium, etc. and the negatively charged ions such as chlorine, hydroxyl ion, etc., separate themselves into two opposing layers of higher than normal concentration of each ion in one of the layers and lower than normal concentration in the other layer. During the dipole layer formation process, which

It should also be pointed out that the electric fields from the net charge of the charge density waves causes adjacent cell membranes to move to and fro as the charge density waves pass between them and or around them (see Figure 6). This is due to the fact that body cells maintain a dipole charge layer across their bi-lipid cell membranes. The electric field of the charge density wave reacts with the charges of the cell's dipole charge layer to make the cell membrane act like a sound speaker diaphragm. However, here we are dealing with diaphragm oscillation rates in the million cycles per second range (ultrasound). This form of broad band ultrasound generation can also destroy microorganisms.

Now that we have some understanding of how a crossed electric and magnetic field and charge density waves can be used to generate broad band ultrasound in body fluids (saline solutions), consider the circuit schematic of Figure 7 (see THE TECHNICAL CORNER at end of article). In Figure 7 we have a 555 timing chip oscillator driving a simple LC tank

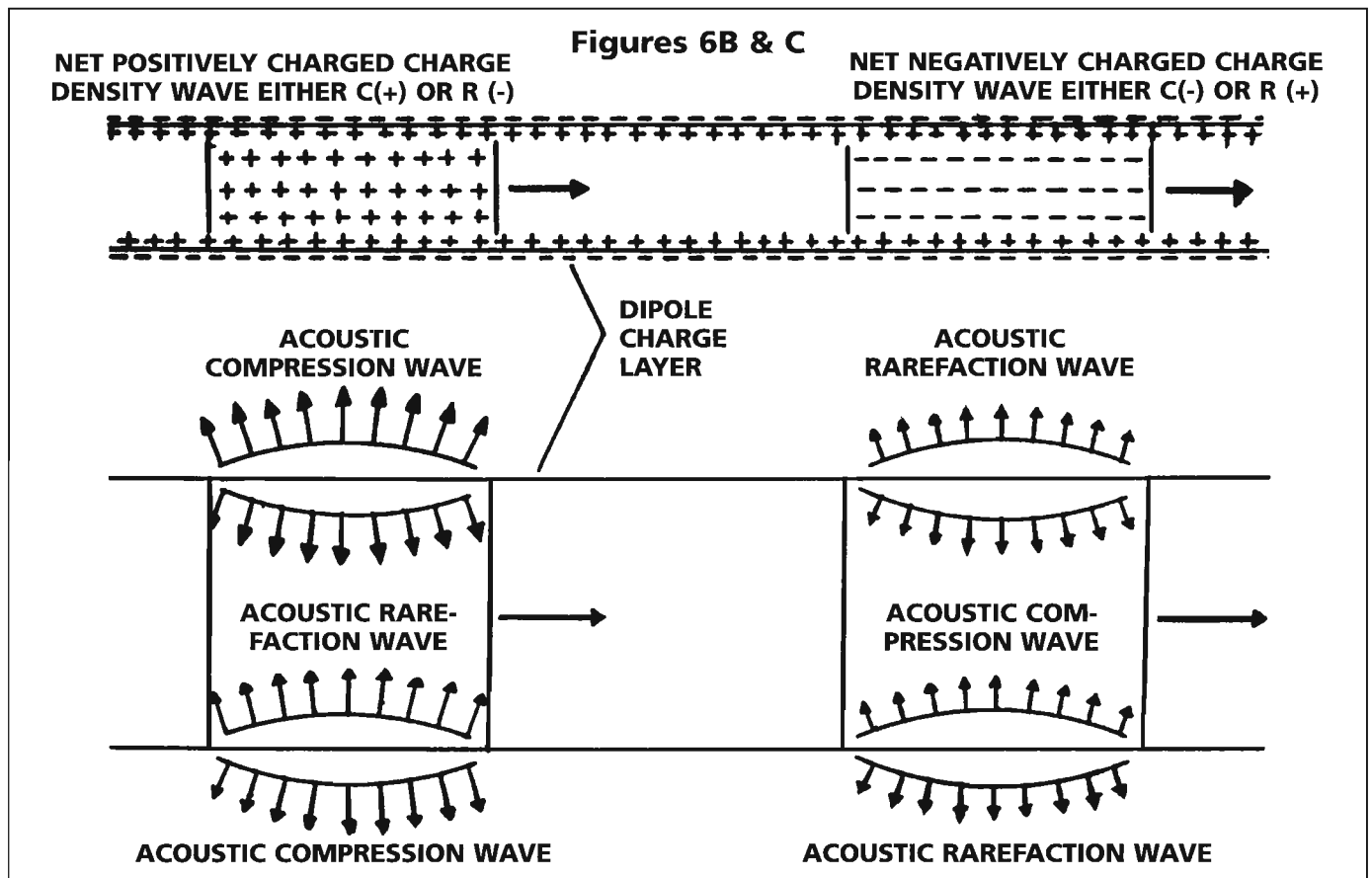
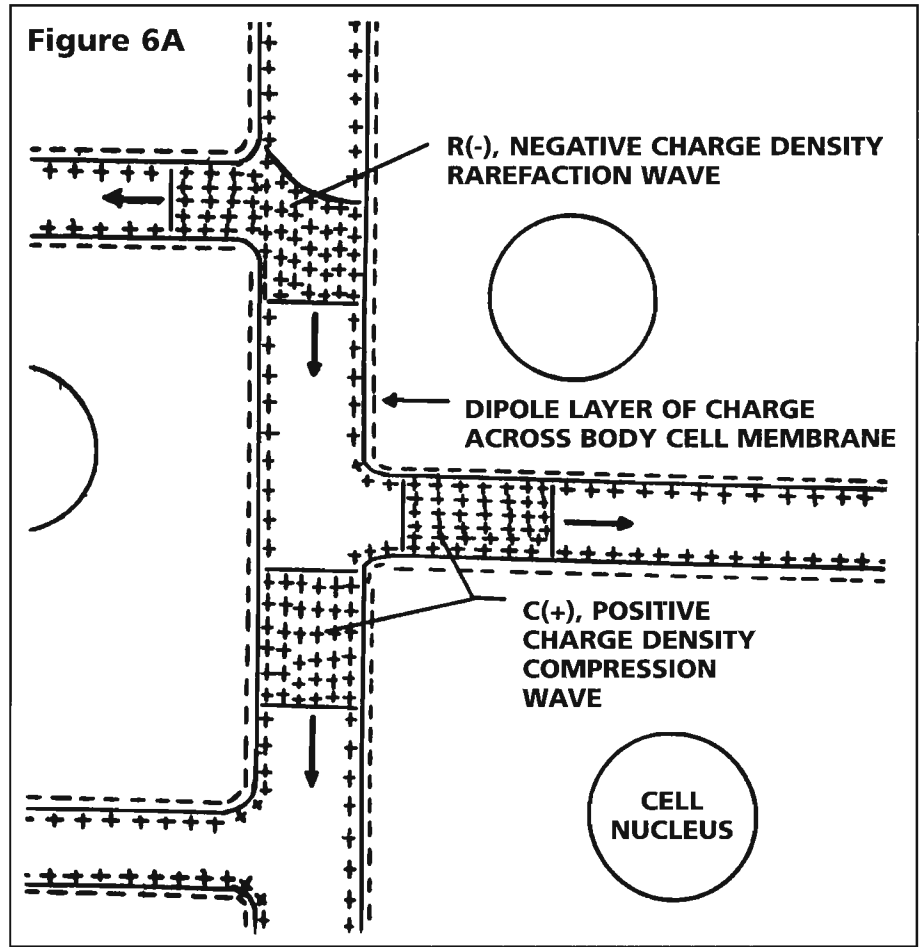
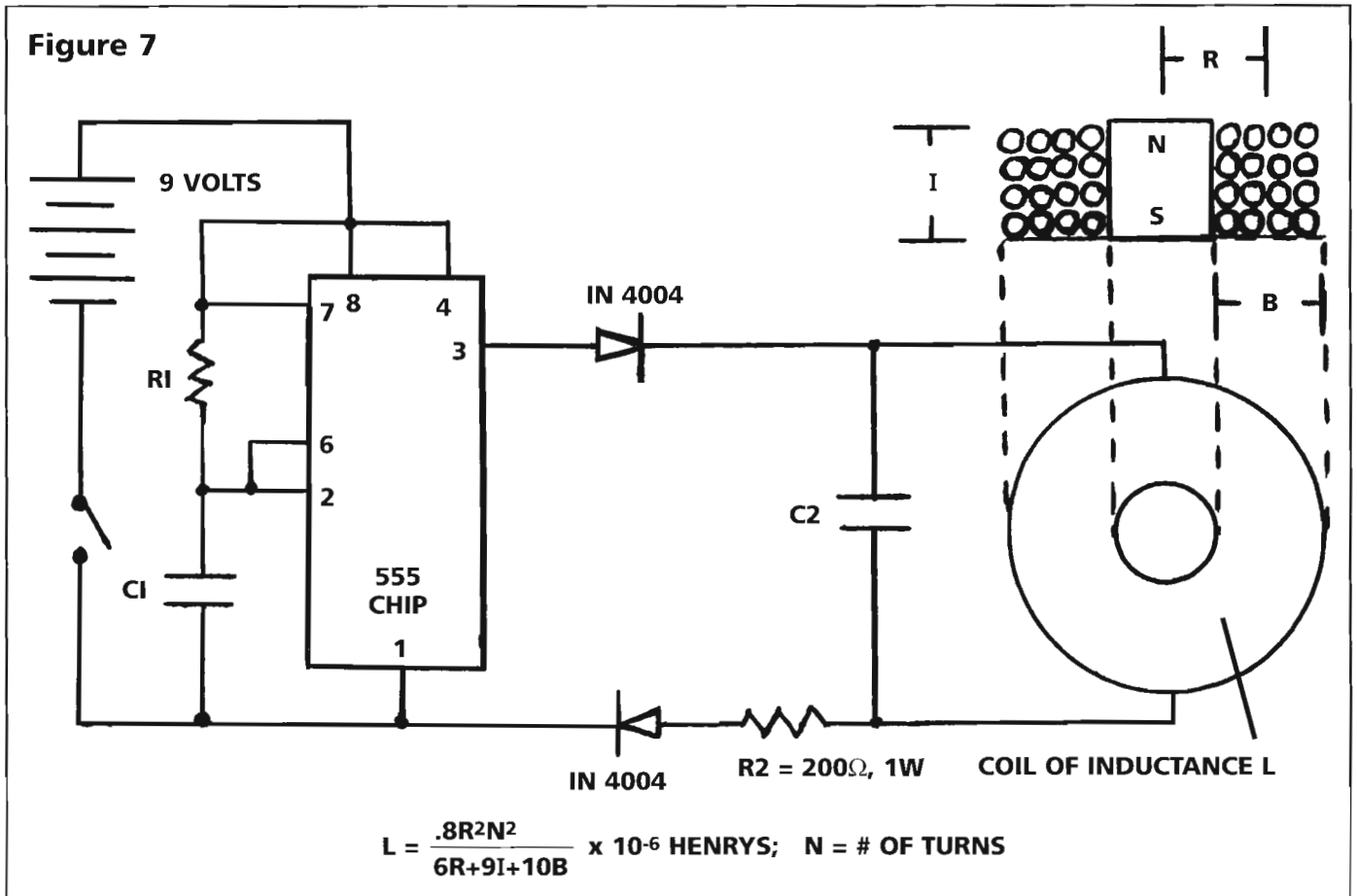


Figure 7



circuit that has a small very strong permanent magnet at the coil center. The 555 oscillator is tuned to match the resonance frequency of the LC tank circuit (see technical section for details). The tank coil oscillations provide the rapidly changing magnetic field strength to produce the electric field at right angle to the magnetic field of the permanent magnet. We can, therefore, expect the generation of broad band ultrasound, which can destroy microorganisms. The maximum frequency of ultrasound generated by this device is determined by the magnetic field strength at the pole face of the permanent magnet. As a rule of thumb it is approximately one million cycles per second per one thousand gauss. Neodymium magnets of ten thousand gauss are commonly available, so with such a magnet we can expect to have approximately ten mega hertz as our maximum ultrasound frequency generated. A large percentage of microbes can be expected to have one of their lethal ultrasound frequency at or below ten mega hertz. So, what we have here is

a simple cheap way to possibly treat many microbial problems.

You technoid readers with a more apocalyptic bent of mind, will note that the device of Figure 7 can be scaled up in size to treat the entire human body at once. For example, consider Figure 8 where we have an auto junk yard electromagnet with a coil securely mounted on it. This coil can be powered by a standard 60 cycle wall current or preferably by a high power audio speaker amplifier running at several thousand cycles per second. The potential need for such an industrial size whole body treatment unit is the danger of possible coming plagues. As Dr. Len Horowitz has so clearly documented in his book *AIDS and Ebola; Nature, Accident or Intentional?*, government research scientists around the world have both accidentally and purposely created very deadly viruses and bacteria. Some of these scientists and governments have also purposely released some of these deadly viruses and bacteria to selected populations, i.e. "special vaccine batches." A com-

munity operated de-plaguing center can be set up in any community that has an auto junk yard electromagnet or its equivalent. We are dealing here with the scum of the earth, and we can put nothing past them. Not even reducing the world population down to 500 million over the next 50 years using deadly plagues, some of which may be very genotype specific. They have a Nazi mentality, which needs to be housed permanently in a federal prison.

Conclusion

When properly used, pulsed magnetic fields can produce broad band ultrasound which can, as Royal Raymond Rife showed in the 1920's and 30's, destroy microorganisms which can maintain disease in the body.

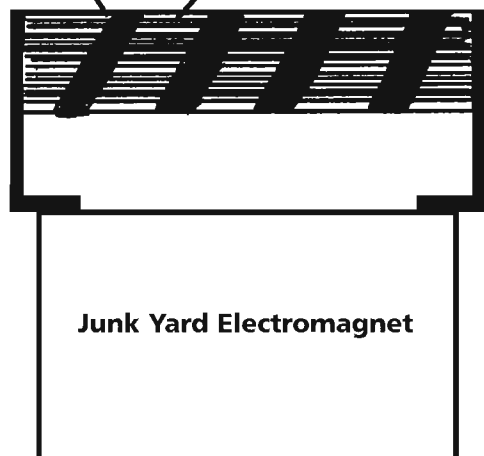
The next time you hear a spokesperson/authority figure for the allopathic medical establishment bad mouthing and pooh-pooing alternative health energy medicine, please send them a copy of this article and suggest to them that they should go back to school and take some physics, for energy

Figure 8

Person sits or lays directly on electromagnet face.

Strong (i.e. nylon) wrap to keep coil from coming apart do to oscillating magnetic field forces.

Coil of several hundred turns of #14 or larger diameter wire.



Strong support and mounting bracket for coil to keep it from flying off.

Junk Yard Electromagnet

medicine is the medicine of the future and is becoming available now.

The Technical Corner

The frequency of oscillation of charged particles in a crossed electric and magnetic field is given by:

$F = (Q)(B) / (2\pi)(M)$; Equation 1
where Q is the charge in coulombs on the particle, M is the effective particle mass in kilograms, and B is the magnetic field intensity in webers per meter squared at the particle location.

The amplitude of displacement (S) of the ultrasound waves given by Equation 1 is approximately:

$S = (2ME) / (QB^2)$; Equation 2
where E is the electric field strength in volts per meter, Q is the magnitude of the charge on a particle in coulombs, and M and B are as before.

555 Chip Square Wave Oscillator Circuit

The resonance frequency of the tank circuit (see Figure 7) formed by L and C2 is Fr.

$$Fr = \frac{1}{2\pi(LC2)^{1/2}}$$

The out put frequency of 555 chip circuit of Figure 7 is Ft.

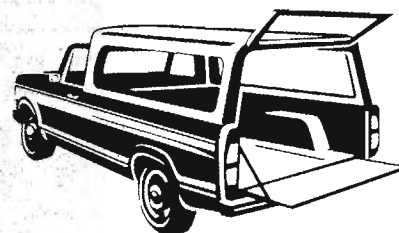
$$Ft = \frac{1.44}{2R1C1}$$

For the circuit to be at maximum out put power for maximum ultrasound generation in the tissue $Fr = Ft$. Choose a C2 and L combination that gives a Fr that is in the upper frequency range of the 555 chip's operating range, i.e. 10^5 sec^{-1} . Now choose a R1 and C1 combination that makes $Ft = Fr$. Resistor R1 can be a composite resistance made up of a resistor pot and resistor in series. By varying the pot value while watching the voltage amplitude across the coil with an oscilloscope, the circuit can be tuned to resonance (maximum voltage amplitude across coil).

References:

1. *Health Freedom News*, August 1994, Pg. 36.
2. *Health Freedom News*, November/December 1994, Pg. 24.
3. *Lancet*, July 26, 1986, Pg. 229.

HFN



Do you have
a vehicle
you are
not using?

NHF needs a
station wagon
or truck!



Yes.

We can supply
a tax receipt!