

# Pulsed Electromagnetic Devices

*What you should know before exposing yourself or your horse to PEMF devices.*

by Matrix Therapy Products

Electromagnetic products are not new to the horse world. There are a variety of devices such as electromagnetic blankets, hoof pads, and shin boots that can be found under brand names such as Respond and Centurion. These are PEMF (pulsed electromagnetic field) devices that have lower outputs and have more contained treatments than the high voltage devices discussed in this article.

Newer PEMF devices you might recognize are the MagnaWave, the Horse Magnetic Pulser, and the P3, which are all open field electromagnetic devices that use a coil applicator. All of these are advertised as PEMF therapy tools, which are re-makes of the machine called PAP-IMI, which the FDA (Food and Drug Administration) banned from import into the U.S. in January 2008.

Based on the calls I get about pulsed electromagnetic field devices there seems to be a lack of information available that would allow users to make informed decisions and take the necessary precautionary measures to insure safety. Personally, I would never allow any animal or myself to have exposure to this type of device. I am a bit biased due to my negative experiences with electromagnetic horse blankets, however there are simply better therapy tools available that are safer, cheaper, and have higher quality technology.

## The Power of Gauss

An electromagnetic field (EMF) is a physical field produced by electrically charged objects that radiates through space. Many common devices in society, such as electric clocks and cell phones, emit EMF levels up to around 400 milligauss (mG). Gauss is the unit of measurement for magnetic fields and one milligauss is 1/1000th of a gauss.

The EPA (Environmental Protection Agency) in the U.S. and Sweden have made a cutoff point of 1 mG as acceptable exposure levels and recommend people avoid chronic exposure. This is why it is significant to note that some manufacturers advertise emitted magnetic energy of up to 19,200 gauss for their electromagnetic open field devices marketed for horses.

One simple way to think of this is comparing it to an MRI (Magnetic Resonance Imaging), which uses electromagnetic outputs of 5,000 to 30,000 gauss. When an MRI test is administered you are alone in a sealed chamber protecting the rest of the medical staff from exposure. It is considered serious business when using this much gauss.

However, PEMF devices that have an open field type application allows the electromagnetic fields to spread throughout the barn. Currently there is not enough research to conclusively prove the dangers of EMF devices, however the EPA still states there is “reason for concern” and it advises “prudent avoidance.”

### - DEFINITIONS -

#### ***Electromagnetic Field (EMF):***

“Electric and magnetic fields are invisible lines of force that surround any electrical device that is plugged in and turned on. EMFs are made up of waves of electric and magnetic energy moving together (radiating) through space. Electric fields are produced by electric charges and magnetic fields are produced by the flow of current through wires or electrical devices” – U.S. EPA

***Electrosmog:*** Excessive EMF that is dispersed when a device is turned on that emits electromagnetic radiation into the surround air.

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In an effort to help people understand the risks of electromagnetic open field devices, I wanted to share a bit about some of the devices marketed for horses as pulsed electromagnetic field therapy (PEMF). It is important to know what electromagnetic fields are, the levels different devices generate, and the risks surrounding them.

### **Treatments: What's Happening?**

During a session with a pulsed electromagnetic field device, the horse's muscles will visibly spasm under the coil applicator. This occurs because the electrical current within the muscle is reacting to the strong stimulus, causing the muscles to involuntarily contract near the PEMF coil applicator. These intense muscle contractions are an uncontrolled, random, and undesirable side effect according to Ben Philipson, expert on PEMF therapy and biomedical electronic engineering.

High-voltage PEMF devices could be perceived as actual therapy devices because they provide a very short analgesic effect, which is similar to giving your horse strong painkillers. Unfortunately, this side effect can lead people to believe the horse is being healed when in reality the underlying problem is not being addressed.

### **PEMF = No FDA Approval**

There are a variety of devices marketed as pulsed electromagnetic field therapy devices, which include the previously mentioned MagnaWave, Horse Magnetic Pulsar, and P3. Horse people are drawn to these devices because they appear easy to use and the manufacturers claim a wide range of benefits and conditions that the devices can supposedly heal.

The problem is that these are experimental devices with no FDA approval. While some could claim benefits, in reality the benefits are unknown and the possibly severe risks are also unknown. There are downsides to acquiring FDA approval because it can be expensive and time-consuming, which favors large companies. However, the FDA should be considered a protection agency that is looking out for the safety of the consumer – you. A product that has not been FDA approved and heavily pollutes the area with EMF is not likely worth using when there are safe, effective options available.



*PEMF device with coil applicator*

The basic technology behind EMF devices easily goes back to the 1940s, therefore when the Medical Device Amendments were enacted in 1976 the technology was in essence “grandfathered in.” Unfortunately, this means that even though the devices are not FDA approved and the original PAP-IMI was banned from import there are still many high-voltage PEMF devices in use.

### **Electrosmog: More Isn't Always Better**

Many of the manufacturers of PEMF open field devices for horses make claims based on studies that are not valid comparisons, because these studies were using much lower levels of EMF exposure. Also, the EMF devices for horses use a method of treatment that is extremely uncontained, which causes electrosmog. Electrosmog is when an excessive amount of EMF is radiated from a device into the surrounding

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area. The non-confined treatments mean that all people and animals in proximity to the device are also receiving EMF exposure.

According to the EPA website, low levels of milligauss can disperse up to 3 feet, which makes it hard to imagine how much greater of a distance 19,200 gauss will travel. On the website for the Horse Magnetic Pulser it states, “All cell phones, land line phones, TV remotes, watches, and anything that might be damaged by an intense high voltage surge must be kept at least ten feet from the coil when the Horse Magnetic Pulser is in operation.” If a device is able to cause electronics to shortage, what possible effects is the body experiencing? Also, the intensity of the high voltage surge might not be strong enough to damage electronics after 10 feet, however that does not mean that the effects of the electromagnetic field has dissipated. With that being said, do we really want any horse receiving this type of exposure?

### **Dangers of Exposure**

The people at the most risk from using PEMF devices are the therapists and/or staff because they have regular exposure to EMF. The EPA states that chronic exposure to EMF should be avoided due to possible health risks. Even though in theory the therapists or staff members are only treating the horse, in reality each time they use an open field device they are receiving equal treatment.

Also, it is especially dangerous if there are any pregnant women – or horses – in the barn while the device is running because the electromagnetic radiation dispersed could cause miscarriages or birth defects. There is also extreme risk for people with heart conditions. For a person with a heart murmur or arrhythmia, it can be life threatening to be in proximity to a PEMF device while it is running.

Dangers/Risks of Exposure to EMF (emitted from PEMF devices):

- Cancer, esp. childhood leukemia
- Miscarriages,
- Nausea,
- Headaches,
- Chronic fatigue,
- Birth defects
- Extremely dangerous for people with heart conditions

### **Other Products that Emit EMFs**

Electromagnetic blankets and related products have milder outputs and are more contained than the PEMF devices discussed. However, they should still be used with caution.

Personally, if an electromagnetic horse blanket is in use I can feel it from 48 feet away. Within minutes I am lightheaded, nauseous, and develop a headache. And yet horses often have to spend hours a week with this treatment as a form of therapy.

Similarly, there are a variety of household appliances that should be used with caution due to the levels of EMFs emitted. For example, household electric blankets emit EMFs (electromagnetic fields) and are listed (see reference) as one of the two most dangerous home appliances.

Electric blankets have added dangers because of the combination of long hours spent under the magnetic field (7-8 hours overnight) and the high levels of EMFs emitted.

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### **Be Aware**

I first learned about pulsed electromagnetic field devices in the late 1980s when I read Dr. Robert Becker's book *The Body Electric* and later his book *Cross Currents*. I highly recommend doing your own research if you're considering a PEMF device because it is quite likely the risks are not worth the possible benefits.

### **Further Reading**

Click on either the option for a PDF or a link to read the following articles.

Seattle Times Article ([http://seattletimes.nwsourc.com/html/localnews/2004022178\\_miracle19m2.html](http://seattletimes.nwsourc.com/html/localnews/2004022178_miracle19m2.html))

Electro Magnetic Field - EMF (<http://brain101.info/EMF.php>)

**Note:** At the end of this article there is this list of dangers from overexposure to EMF:

- Headaches and Migraine
- Irritability, Tinnitus and Vertigo
- Chronic Fatigue Syndrome
- Fibromyalgia
- Ménière's Disease
- Seizures and Epilepsy
- Autism, Rett Syndrome and other Brain developmental diseases in children
- Brain Tumors, specially Acoustic Neuromas
- DNA Mutations that cause Birth Defects in the fetus (if the pregnant woman is exposed)