



January 24, 2011

**Comment on DOJ CRT Docket No. 110**

Document ID: DOJ-CRT-2010-0005-0001: Nondiscrimination on the Basis of Disability: Accessibility of Web Information and Services of State and Local Government Entities and Public Accommodations

Thank you for the opportunity to comment on DOJ CRT Docket No. 110. My letter of comment, and a recommendation are enclosed for your review.

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**Recommendation to Americans With Disabilities Hearing Board**

The Department of Justice ADA Program should immediately address the effect of chronic, pulsed radiofrequency radiation from smart (wireless) utility meters on sensitive populations. The ADA Program should formally recognize the serious limitations posed on people with RF-sensitive metal or medical implants, and support them with the necessary ADA classifications to provide a basis for opting-out of wireless utility meter installation.

The FCC's Grants of Authorization and other certification procedures for smart meters (wireless utility meters) do not ensure adequate safety to safeguard people under Department of Justice protection under the Americans with Disabilities Act.

## **Background**

People who have medical implants, particularly metal implants, may be more sensitive to spurious RF exposures for two reasons. Electromagnetic interference (EMI) with critical care medical equipment and medical implants is a potentially serious threat. Patients with deep-brain stimulators (Parkinson's disease patients) have reported adverse health effects due to RF from various environmental sources like security gates and RFID scanners. Patients with deep brain stimulators have reported the devices to be reprogramming or electrodes shut-down as a result of encounters with wireless RFID scanners. One manufacturer, Medtronic, has issued a warning for DBS implant patients to limit RF exposure to less than 0.1 W/Kg SAR (or sixteen times lower than for the general public) for MRI exposures.

The IEEE SC4 committee (2001) considered changes to existing ANSI/IEEE standards adopted in 1992 (C95.1-1992). They discussed vulnerable organs (eyes, testes) and metallic implants that can intensify localized RF exposures within the body and its tissues.

*“Question 20: Are there specific tissues or points within the body that have particularly high susceptibilities to local heating due to thermal properties in the immediate vicinity of the tissue?”*

Committee minutes include the following discussion on metallic implants.

*“Metallic implants are an interesting example of this question. There can be very localized high field concentrations around the tips of long metal structures, in the gaps of wire loops. Of course, these metal devices don’t create energy, but can only redistribute it, so the effect is limited to some extent. Also the high thermal conductivity and specific heat capacity make them good thermal sinks for any localized heat sources generated around them.”*

Since deep brain stimulators in Parkinson’s patients involve metal implants that are essentially long metal structures with tips that interface with brain tissue and nerves within the brain and body, exposing such patients with implants to high levels of pulsed RF that can produce localized, high RF within the body is certainly inadvisable. It is clear the IEEE SC4 committee recognized the potential risk by to calling such implanted metallic devices good ‘thermal sinks’ for localized heating dissipation.

### **Specific Case of Jackie Christensen, Parkinson’s Patient with DBS**

[www.startribune.com/opinion/commentary/22122349.html](http://www.startribune.com/opinion/commentary/22122349.html)

**Watch where you're beaming that signal**

**By JACKIE HUNT CHRISTENSEN June 29, 2008**

In January 2006, I had my "battery-operated brain," also known as BOB, installed. What I mean is that I underwent two surgeries to have lead wires with electrodes implanted deep into my brain, which were then hooked up to neurotransmitter "pacemakers" in my chest. Medtronic pioneered this deep brain stimulation technology, which controls most of my physical symptoms

of Parkinson's disease (PD) for most of each day. This technology has stopped the dyskinesia -- the involuntary writhing movements caused by Parkinson's medication that caused me to "swang" my body along like one of the Festrunk brothers (the "wild and crazy guys" from "Saturday Night Live"). Now I can do *almost* everything I could do before PD if I give myself enough time and revise my standards slightly. At least that's what I thought until I began learning about ways in which our ever-changing world of technology can affect my system.

You see, the neurotransmitters in deep brain stimulation systems produce electrical pulses in the brain similar to those made by a cardiac pacemaker. Although those pulses are delivered at different settings in each organ, their basic function is the same: to keep that particular organ operating as normally as possible. And you would probably think that as long as these pieces of electronic hardware and software are under unbroken skin and tissue, the systems are safe from harm. But you would be wrong.

When BOB was first turned on in February 2006, my programmer began a process of setting the voltage of each transmitter to its optimum setting for my body. (This process varies for everyone. Mine took six visits, about a month apart). She listed items and situations to avoid: large magnets, commonly found in refrigerator doors, grocery-store freezer doors and stereo speakers; metal detectors used in airport security; antitheft systems in stores; MRIs -- basically all large sources of electromagnetic interference (EMI).

Each time I see her, the list of potential problem products or situations grows: invisible dog fencing, home gaming systems with wireless controllers (Wii, Xbox 360, PS3), and cell phones in breast pockets. It seems that every day, there is a new wireless product: light switches, pest-control systems -- you name it. And now the corollary products to *block* wireless signals are beginning to emerge, such as a Japanese device whose makers claim it can block cell-phone signals within 100 feet. If it can do that to a cell phone, what can it do to BOB and me?

The latest threat to make headlines: RFID (radio frequency identification) tags that hospitals use to keep track of their medical equipment! So now I am potentially at risk if I go to the very institution whose practitioners pledge to "first, do no harm."

Last October, I began having dyskinesia on my left side. I hadn't changed my medication. I couldn't figure out what might be causing it. Many phone calls, several hundred dollars in plane fare to see my neurosurgeon in

Cleveland, numerous X-rays and a long session with a programmer revealed that *something* had caused the neurostimulator on my right side, which controls the left side of my body, to be reset to factory settings. The left neurostimulator had maintained its programmed settings. My neurosurgeon said he knew of only two ways this could have happened: equipment failure (which seemed unlikely, because the device was reprogrammed and, within an hour, I felt fine) or exposure to a large source of electromagnetic interference. But I always go out of my way to avoid known sources of EMI. So what could it have been?

I now find myself cringing whenever I hear of a new wireless widget, as I wonder what its implications will be for BOB and me, and for those with cardiac pacemakers or defibrillators, which could also be affected. Some of us seem to be more sensitive to sources of EMI than others. We are the proverbial canaries in the coal mine.

This canary is not going to go quietly, nor simply begin building a nest of tinfoil to block the electromagnetic interference. No, I plan to sing -- and to call on Congress to force the Federal Communications Commission to implement Public Law 97-259. This law, enacted in 1982, gave the FCC the power to regulate the makers of consumer products that can generate EMI. The FCC abdicated that power, instead allowing the electronics industry and others to come up with standards and voluntary compliance plans that we've seen fail in so many other areas.

I urge all of the other canaries out there, such as pacemaker patients Dick Cheney and Sen. George Voinovich, and employees at medical-device manufacturers Medtronic, Guidant, St. Jude Medical and others, to join in my song.

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## **Published Paper on Wireless Interference with Critical Care Devices**

<http://www.newsvine.com/news/2008/06/24/1606734-wireless-hospitals-systems-can-disrupt-med-devices>

Tue Jun 24, 2008 4:00 PM EDT

technology, health, med, dangers, microchip

Lindsey Tanner, AP Medical Writer

CHICAGO — Wireless systems used by many hospitals to keep track of medical equipment can cause potentially deadly breakdowns in lifesaving devices such as breathing and dialysis machines, researchers reported Tuesday in a study that warned hospitals to conduct safety tests.

Some of the microchip-based "smart" systems are touted as improving patient safety, but a Dutch study of equipment — without the patients — suggests the systems could actually cause harm.

A U.S. patient-safety expert said the study "is of urgent significance" and said hospitals should respond immediately to the "disturbing" results.

The wireless systems send out radio waves that can interfere with equipment such as respirators, external pacemakers and kidney dialysis machines, according to the study.

Researchers discovered the problem in 123 tests they performed in an intensive-care unit at an Amsterdam hospital. Patients were not using the equipment at the time.

Electromagnetic glitches occurred in almost 30 percent of the tests when microchip devices similar to those in many types of wireless medical equipment were placed within about one foot of the lifesaving machines.

Nearly 20 percent of the cases involved hazardous malfunctions that would probably harm patients. These included breathing machines that switched off; mechanical syringe pumps that stopped delivering medication; and external pacemakers, which regulate the heart, that malfunctioned.

The wireless systems are used to tag and keep track of medical equipment like heart-testing machines, joint replacements and surgical staplers. They

can help quickly locate devices that are elsewhere in the hospital and help prevent theft.

The technology also is viewed as a way to prevent drug counterfeiting, by embedding microchips in drug containers, and to prevent harmful medical errors by keeping tabs on devices used during surgery.

The results show that it's crucial for hospitals to test their wireless items before using them around equipment essential for keeping patients alive, said Dr. Erik Jan van Lieshout, a study co-author and critical care specialist at the University of Amsterdam's Academic Medical Center.

His study appears in Wednesday's Journal of the American Medical Association.

### **Electronic Interference**

Consumers may experience electronic interference (electromagnetic interference or EMI) from smart meter wireless signals.

Medical and other critical care equipment in the home environment may not work, or work properly due to electronic interference from smart meters.

Security systems, surveillance monitors and wireless intercoms may be rendered inoperable or unreliable. Some cordless telephones do not work reliably, or have substantial interference from smart meter RF emissions.

Electronic equipment and electrical appliances may be damaged or have to be replaced with other, newer equipment in order not to be subject to electromagnetic interference from smart meter RF bursts.

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