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RADIO WAVES MAY INTERFERE WITH CONTROL OF POWERED WHEELCHAIRS AND MOTORIZED SCOOTERS

This is to let you know that laboratory tests performed by the Food and Drug Administration (FDA) showed that radio waves can cause unintended motion of powered wheelchairs and motorized scooters. Radio waves are a form of electromagnetic energy. When this energy unintentionally affects the operation of a device, it is called "electromagnetic interference" (EMI).

The following information summarizes what you should know about EMI. You can use this information to minimize the risk that EMI will affect your powered wheelchair or motorized scooter.

Where do radio waves come from?

Radio waves are emitted from the antennas of cellular phones, mobile two-way radios (like those used in police, fire and emergency vehicles), hand-held two-way radios (like walkie-talkies), radio stations, TV stations, amateur radio (HAM) transmitters, wireless computer links, microwave sources, and paging transmitters. Because electromagnetic (EM) energy is more intense closer to the transmitting antenna (source), the EM fields from two-way radios are of special concern.

If my powered wheelchair or motorized scooter is affected by EMI, what kind of motion should I expect?

This is hard to predict. It would depend on a number of factors, including: the intensity of the radio waves, the construction of the powered wheelchair or motorized scooter, whether it is on level ground or on a slope, and whether it is in motion or still. The motion can be erratic, with the powered wheelchair or motorized scooter moving by itself or coming to a sudden stop. Further, it is possible for EMI to unexpectedly release the brakes on a powered wheelchair or cause it to go in unintended directions. Some intense sources of EMI can even damage the control system of the powered wheelchair or motorized scooter.

Is there any way to know, for sure, whether radio waves are responsible for the unintended motion of my powered wheelchair or motorized scooter?

Unfortunately, interference from radio wave sources may be difficult to recognize, since the signals from these sources are invisible and may be intermittent. However, FDA recommends that you report all incidents of unintended motion or brake release to the powered wheelchair or motorized scooter manufacturer, and if possible, note whether there was a radio wave source nearby at the time of the incident.

Has anyone been hurt from erratic, unintended motion of powered wheelchairs or motorized scooters?

FDA has reports of injuries that resulted from uncontrolled motion of powered wheelchairs and motorized scooters, but it is unclear how many of these incidents were actually caused by radio wave interference.

Are all powered wheelchairs and motorized scooters susceptible to EMI?

Each make and model differs in its ability to resist electromagnetic interference. That is, each has a particular level of "immunity" to interference, measured in volts per meter (V/m). The higher the immunity level, the greater the protection. In other words, a powered wheelchair or motorized scooter with a high immunity level is less likely to be affected by a strong radio source than one with a low immunity level.

What is FDA doing about the problem?

FDA has written to the manufacturers of powered wheelchairs and motorized scooters, asking them to test their new products to be sure they provide a reasonable degree of immunity against EMI. The letter says that powered wheelchairs and motorized scooters should have an immunity level of at least 20 V/m, which will provide a reasonable degree of protection against the more common sources of EMI.

FDA is also asking these manufacturers to clearly label their new products with the immunity level, or else state that the immunity level is not known. The labeling and informational material supplied with the powered wheelchair or motorized scooter must explain what the immunity level means, and warn users about the possibility of EMI and how to avoid it. In addition, FDA is recommending that

manufacturers undertake an educational program to inform users of powered wheelchairs and motorized scooters, and their caregivers, about the problems associated with EMI and actions that they can take to minimize the risk.

FDA requested that manufacturers of powered wheelchairs and motorized scooters take these actions by December 2, 1994.

What can I do to find out if my powered wheelchair or motorized scooter is likely to be affected by EMI?

If you've had your powered wheelchair or motorized scooter for a long time and haven't experienced any unintended motion, it's not likely that you'll have problems in the future. But it's always possible that problems could arise if you're close to a source of radio waves. So it's important to be alert to this possibility.

If you want to find out how well your powered wheelchair or motorized scooter is protected against EMI, you can contact the manufacturer and ask about its immunity level.

What can I do to reduce the risk that my powered wheelchair or motorized scooter could be affected by EMI?

Here are some precautions you can take:

- 1) Do not turn ON or use hand-held personal communication devices, such as citizens band (CB) radios and cellular phones, while the powered wheelchair or motorized scooter is ON.
- 2) Be aware of nearby transmitters, such as radio or TV stations and hand-held or mobile two-way radios, and try to avoid coming close to them.

For example, a powered wheelchair or motorized scooter with an immunity level of 20 V/m should stay at least three feet from a hand-held two-way radio and ten feet from a mobile two-way radio.

- 3) Be aware that adding accessories or components, or modifying the powered wheelchair or motorized scooter, may make it more susceptible to interference from radio wave sources. (Note: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair or motorized scooter.)

What should I do if my powered wheelchair or motorized scooter moves unexpectedly?

If unintended motion or brake release occurs, turn the powered wheelchair or motorized scooter OFF as soon as it is safe.

If my powered wheelchair or motorized scooter moves unexpectedly, where should I report this?

You should report the incident to:

- **the manufacturer and/or distributor, and**
- **FDA's MedWatch problem reporting program. Call 1-800-FDA-1088 and ask for Form 3500.**