Safety Information and Usage Guidelines

Exposure to Radio Frequency Signals

Your wireless handheld portable telephone is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals.

In August, 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless phones. Those guidelines are consistent with the safety standards previously set by both U.S. and international standards bodies:

ANSI C95.1 (1992)*

NCRP Report 86 (1986)

ICNIRP (1996)

Those standards were based on comprehensive and periodic evaluations of the relevant scientific literature. For example, over 120 scientists, engineers, and physicians from universities, government health agencies, and industry reviewed the available body of research to develop the ANSI Standard (C95.1).

The design of your phone complies with the FCC guidelines (and those standards).

* American National Standards Institute; National Council on Radiation Protection and Measurements; International Commission on Non-Ionizing Radiation Protection

Antenna Care

Unauthorized antennas, modifications, or attachments could damage the phone and may violate FCC regulations.

Phone Operation

NORMAL POSITION: Hold the phone as you would any other telephone.

TIPS ON EFFICIENT OPERATION: For your phone to operate most efficiently:

- Do not touch the antenna unnecessarily when the phone is in use. Contact with the antenna affects call quality and may cause the phone to operate at a higher power level than otherwise needed.

Driving

Check the laws and regulations on the use of wireless telephones in the areas where you drive. Always obey them. Also, if using your phone while driving, please:

- Give full attention to driving — driving safely is your first responsibility;
- Use hands-free operation, if available;
- Pull off the road and park before making or answering a call if driving conditions so require.

Electronic Devices

Most modern electronic equipment is shielded from RF signals. However, certain electronic equipment may not be shielded against the RF signals from your wireless phone.

Pacemakers

The Health Industry Manufacturers Association recommends that a minimum separation of six (6″) inches (15.24 centimeters) be maintained between a handheld wireless phone and a pacemaker to avoid potential interference with the pacemaker. These

recommendations are consistent with the independent research by and recommendations of Wireless Technology Research.

Persons with pacemakers:

- Should ALWAYS keep the phone more than six inches from their pacemaker when the phone is turned ON;
- Should not carry the phone in a breast pocket;
- Should use the ear opposite the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, turn your phone OFF immediately.

Hearing Aids

Some digital wireless phones may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer.

Other Medical Devices

If you use any other personal medical device, consult the manufacturer of your device to determine if they are adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information.

Turn your phone OFF in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

Vehicles

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles. Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Posted Facilities

Turn your phone OFF in any facility where posted notices so require.

Aircraft

FCC regulations prohibit using your phone while in the air. Switch OFF your phone before boarding an aircraft.

Blasting Areas

To avoid interfering with blasting operations, turn your phone OFF when in a "blasting area" or in areas posted: "Turn off two-way radio". Obey all signs and instructions.

Potentially explosive atmospheres

Turn your phone OFF when in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include fueling areas such as gasoline stations; below deck on boats; fuel or chemical transfer or storage facilities; vehicles using liquefied petroleum gas (such as propane or butane); areas where the air contains chemicals or particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

For Vehicles Equipped with an Air Bag

An air bag inflates with great force. DO NOT place objects, including both installed or portable wireless equipment, in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

FCC Declaration of Conformity

tri-mode phone: GS-200 with PC/Data interface cable XN-1DC10U

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1)This device may not cause harmful interference, and
(2)this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:
SHARP ELECTRONICS CORPORATION
Sharp Plaza, Mahwah, New Jersey 07430
TEL: 1-800-BE-SHARP

Tested To Comply With FCC Standards

FOR HOME OR OFFICE USE

FCC Notice

The phone may cause TV or radio interference if used in close proximity to receiving equipment. The FCC can require you to stop using the phone if such interference cannot be eliminated.

Information To User

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation; if this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient/Relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

Batteries

Caution: All batteries can cause property damage, injury or burns if a conductive material, such as jewelry, keys or beaded chains, touches exposed terminals. The material may complete an electrical circuit and become quite hot. To protect against such unwanted current drain, exercise care in handling any charged battery, particularly when placing it inside your pocket, purse or other container with metal objects. When the battery is detached from the phone, use a cover made of non-conductive poly bag, for storing your battery, when it is not in use.

Flying

You should turn off your phone before boarding any aircraft.

To prevent possible interference with aircraft systems, U.S. Federal Aviation Administration (FAA) regulations require you to have permission from a crew member to use your phone while the plane is on the ground. To prevent any risk of interference, FCC regulations prohibit using your phone while the plane is in the air.

Limiting Children's Access to Your Phone

Your phone should not be played with by children. They could hurt themselves and others, damage the phone or make calls that increase your bill.

Changes or Modifications

Any changes or modifications to your phone not expressly approved in this document could void your warranty for this equipment and void your authority to operate this equipment.

Only use approved batteries, antennas and chargers. The use of unauthorized accessories may be dangerous and will invalidate the phone warranty if said accessories cause damage to or a defect to develop in the phone.

Although your phone is quite sturdy, it is a complex piece of hardware and can be broken. Use common-sense guidelines to avoid dropping, hitting, bending or sitting on it.

Liquefied Petroleum Gas

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn.: Publication Sales Division.

Phone Care

Your phone is designed for excellent durability under normal use conditions. Protect your phone from water damage that could result from spills or excessive exposure to rain.

Never submerge your wireless phone.

Cleaning the Phone

Cleaning of this product should only be done with a damp cloth. The use of chemical cleaners may harm the finish and integrity of the radio housing and is not recommended.

NOTE

Some of the network services explained in this operation manual may not be available on your network. Please contact your network operator or network service provider.

Drivers Safety Tips

Your wireless telephone gives you the powerful ability to communicate by voice --- almost anywhere, anytime. But an important responsibility accompanies the benefits of wireless phones, one that every user must uphold.

When you drive a car, driving is your first responsibility. When using your wireless phone behind the wheel of a car, practice good common sense and remember the following tips:

1. Get to know your wireless phone and its features such as speed dial and redial. If available, these features help you to place your call without taking your attention off the road.

2. When available, use a hands-free device. If possible, add an additional layer of convenience and safety to your wireless phone with one of the many hands-free accessories available today.

3. Position your wireless phone within easy reach. Be able to access your wireless phone without removing your eyes from the road. If you get an incoming call at an inconvenient time, if possible, let your voicemail answer it for you.

4. Let the person you are speaking with know you are driving; if necessary, suspend the call in heavy traffic or hazardous weather conditions. Rain, sleet, snow, ice, and even heavy traffic can be hazardous.

5. Do not take notes or look up phone numbers while driving. Jotting down a "to do" list or flipping through your address book takes attention away from your primary responsibility, driving safety.

6. Dial sensibly and assess the traffic; if possible, place calls when you are not moving or before pulling into traffic. Try to plan calls when your car will be stationary. If you need to make a call while moving, dial only a few numbers, check the road and your mirrors, then continue.

7. Do not engage in stressful or emotional conversations that may be distracting. Make people you are talking with aware you are driving and suspend conversations that have the potential to divert your attention from the road.

8. Use your wireless phone to call for help. Dial 911 or other local emergency number in the case of fire, traffic accident or medical emergencies. *Remember, it is a free call on your wireless phone!*

9. Use your wireless phone to help others in emergencies. If you see an auto accident, crime in progress or other serious emergency where lives are in danger, call 911 or other local emergency number, as you would want others to do for you.

10. Call roadside assistance or a special non-emergency wireless assistance number when necessary. If you see a broken-down vehicle posing no serious hazard, a broken traffic signal, a minor traffic accident where no one appears injured, or a vehicle you know to be stolen, call roadside assistance or other special non-emergency wireless number.

"The wireless industry reminds you to use your phone safely when driving."

Provided by the Cellular Telecommunications Industry Association

FDA Consumer Update

The U.S. Food and Drag Administration's Center for Device and Radiological Health Consumer Update on Mobile Phones

FDA has been receiving inquiries about the safety of mobile phones, including cellular phones and PCS phones. The following summarizes what is known --- and what reminds unknown --- about whether these products can pose a hazard to health, and what can be done to minimize any potential risk. This information may be used to respond to questions.

Why the concern?

Mobile phones emit low levels of radiofrequency energy (i.e., radiofrequency radiation) in the microwave range while being used. They also emit very low levels of radiofrequency energy (RF), considers non-significant, when in the stand-by mode. It is well known that high levels of RF can produce biological damage through heating effects (this is how your microwave oven is able to cook food). However, it is not known whether, to what extent, or through what mechanism, lower levels of RF might cause adverse health effects as well. Although some research has been done to address these questions, no clear picture of the biological effects of this type of radiation has emerged to date. Thus, the available science does not allow us to conclude that mobile phones are absolutely safe, or that they are unsafe. However, the available scientific evidence does not demonstrate any adverse health effects associated with the use of mobile phones.

What kinds of phones are in question ?

Questions have been raised about hand-held mobile phones, the kind that have a built-in antenna hat is positioned close to the user's head during normal telephone conversation. These types of mobile phones are of concern because of the short distance between the phone's antenna --- the primary source of the RF --- and the person's head. The exposure to RF from mobile phones in which the antenna is located at greater distances from the user (on the outside of a car, for example) is drastically lower than that from hand-held phones, because a person's RF exposure decreases rapidly with distance from the source. The safety of so-called "cordless phones," which have a base unit connected to the telephone wiring in a house and which operate at far lower power levels and frequencies, has not been questioned.

How much evidence is there that hand-held mobile phones might be harmful?

Briefly, there is not enough evidence to know for sure, either way; however, research efforts are on-going. The existing scientific evidence is conflicting and many of the studies that have been done to date have suffered from flaws in their research methods. Animal experiments investigating the effects of RF exposures characteristic of mobile phones have yielded conflicting results. As few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. In one study, mice genetically altered to be predisposed to developing one type of cancer developed more than twice as many such cancers when they were exposed to RF energy compared to controls. There is much uncertainly among scientists about whether results obtained from animal studies apply to the use of mobile phones. First, it is uncertain how to apply the results obtained in rats and mice to humans. Second, many of the studies that showed increased tumor development used animals had had already been treated with cancer-causing chemicals, and other studies exposed the animals to the RF virtually continuously --- up to 22 hours per day.

For the past five years in the United States, the mobile phone industry has supported research into the safety of mobile phones. This research has resulted in two findings in particular that merit additional study:

1. In a hospital-based, case-control study, researchers looked for an association between mobile phone use and either glioma (a type of brain cancer) or acoustic neuroma (a benign tumor of the nerve sheath). No statistically significant association was found between mobile phone use and acoustic nouroma. There was also no association between mobile phone use and gliomas when all types of gliomas were considered together. It should be noted that the average length of mobile phone exposure in this study was less than three years.

   When 20 types of glioma were considered separately, however, an association was found between mobile phone use and one rare type of gliomas, neuroepitheliomatous tumors. It is possible with multiple comparisons of the same sample that this association occurred by chance. Moreover, the risk did not increase with how often the mobile phone was used, or the length of the calls. In fact, the risk actually *decreased* with cumulative hours of mobile phone use. Most cancer causing agents increase risk with increased exposure. An ongoing study of brain cancers by the National Cancer Institute is expected to bear on the accuracy and repeatability of these results. [1]

2. Researchers conducted a large battery of laboratory tests to assess the exposure to mobile phone RF on genetic material. These included tests for several kinds of abnormalities, including mutations, chromosomal aberrations, DNA strand breaks, and structural changes in the genetic material of blood cells called lymphocytes. None of the tests showed any effect of the RF except for the micronucleus assay, which detects structural effects on the genetic material. The cells in this assay showed changes after exposure to simulated cell phone radiation, but only after 24 hours of exposure. It is possible that exposing the test cells to radiation for this long resulted in heating. Since this assay is known to be sensitive to heating, heat alone could have caused the abnormalities to occur. The data already in the literature on the response of the micronucleus assay to RF are conflicting. Thus, follow-up research is necessary. [2]

   FDA is currently working with government, industry, and academic groups to ensure the proper follow-up to these industry-funded research findings. Collaboration with the Cellular Telecommunications Industry Association (CTIA) in particular is expected to lead to FDA providing research recommendations and scientific oversight of new CTIA-funded research based on such recommendations.

Two other studies of interest have been reported recently in the literature:

1. Two groups of 18 people were exposed to simulated mobile phone signals under laboratory conditions while they performed cognitive function tests. There were no changes in the subject's ability to recall words, numbers, or pictures, or in their spatial memory, but they were able to make choices more quickly in one visual test when they were exposed to simulated mobile phone signals. This was the only changes noted among more than 20 variables compared. [3]
2. In a study of 209 brain tumor cases and 425 matched controls, there was no increased risk of brain tumors associated with mobile phone use. When tumors did exist in certain locations, however, they were more likely to be on the side of the head where the mobile phone was used. Because this occurred on only a small number of cases, the increased likelihood was too small to be statistically significant. [4]

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1. Muscat et al. Epidemiological Study of Cellular Telephone Use and Malignant Brain Tumors. In: State of the Science Symposium; 1999 June 20; Long Beach, California.
2. Tice et al. Tests of mobile phone signals for activity in genotoxicity and other laboratory assays. In: Annual Meeting of the Environment Mutagen Society; March 29, 1999, Washington, D.C.; and personal communication, unpublished results.
3. Preece, AW, Iwi, G, Davies-Smith, A, Wesnes, K, Butler, S, Lim, E, and Varey, A. Effect of a 915-MHz simulated mobile phone signal on cognitive function in man. Int.. J. Radiat. Biot., April 8, 1999.
4. Hardell, L, Nasman, A, Pahlson, A, Hallquist, A and Mild, KH. Use of cellular telephones and the risk for brain tumors: a case-control study. Int. J. Oncol., 15: 113-116, 1999

In summary,, we do not have enough information at this point to assure the public that there are, or are not, any low incident health problems associated with use of mobile phones. FDA continues to work with all parties, including other federal agencies and industry, to assure that research is undertaken to provide the necessary answers to the outstanding questions about the safety of mobile phones.

What is known about cases of human cancer that have been reported in users of hand-held mobile phones?

Some people who have used mobile phones have been diagnosed with brain cancer. But it is important to understand that this type of cancer also occurs among people who have not used mobile phones. In fact, brain cancer occurs in the U.S. population at a rate of about 6 new cases per 100,000 people each year. At that rate, assuming 80 million uses of mobile phones (a number increasing at a rate of about 1 million per month), about 4800 cases of brain cancer would be expected each year among those 80 million people, whether or not they used their phones. Thus it is not possible to tell whether any individual's cancer arose because of the phone, or whether it would have happened anyway. A key question is whether the risk of getting a particular form of cancer is greater among people who use mobile phones than among the rest of the population. One way to answer that question is to compare the usage of mobile phones among people with brain cancer with the use of mobile phones among appropriately people without brain cancer.

This is called a case-control study. The current case-control study of brain cancers by the National Cancer Institute, as well as the follow-up research to be sponsored by industry, will begin to generate this type of information.

What is FDA's role concerning the safety of mobile phones?

Under the law, FDA does not review the safety of radiation-emitting consumer products such as mobile phones before marketing, as if it does with new drugs or medical devices. However, the agency has authority to take action if mobile phones are shown to emit radiation at a level that is hazardous to the user. In such a case, FDA could require the manufacturers of mobile phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists.

Although the existing scientific data do not justify FDA regulatory actions at this time, FDA has urges the mobile phone industry to take a number of steps to assure public safety. The agency has recommended that the industry:

- support needed research into possible biological effects of RF of the type emitted by mobile phones;
- design mobile phones in a way that minimizes any RF exposure to the user that is not necessary for device function; and
- cooperate in providing mobile phone users with the best possible information on what is known about possible effects of mobile phone use on human health.

At the same time, FDA belongs to an interagency working of the federal agencies that have responsibility for different aspects of mobile phone safety to ensure a coordinated effort at the federal level. These agencies are:

- National Institute for Occupational Safety and Health
- Environmental Protection Agency
- Federal Communications Commission
- National Telecommunications and Information Administration

The National Institutes of Health also participates in this group.

In the absence of conclusive information about any possible risk, what can concerned individuals do?

If there is a risk from these products --- and at this point we do not know that there is --- it is probably very small.

But if people are concerned about avoiding even potential risks, there are simple steps they can take to do so. For example, time is a key factor in how much exposure a person receives. Those persons who spend long periods of time on their hand-held mobile phones could consider holding lengthy conversations on conventional phones and serving the hand-held models for shorter conversations or for situations when other types of phones are not available.

People who must conduct extended conversations in their cars every day could switch to a type of mobile phone that places more distance between their bodies and the source of the RF, since the exposure level drops off dramatically with distance. For example, they could switch to:

- a mobile phone in which the antenna is located outside the vehicle,
- a hand-held phone with a built-in antenna connected to a different antenna mounted on the outside of the car or built into a separate package, or
- a headset with a remote antenna to a mobile phone carried at the waist.

Again, the scientific data do not demonstrate that mobile phones are harmful. But if people are concerned about the radiofrequency energy from these products, taking the simple precautions outlined above can reduce any possible risk.

Where can I find additional information?

For additional information, see the following websites:

Federal Communications Commission (FCC) RF Safety Program (select "Information on Human Exposure to RF Fields from Cellular and PCS Radio Transmitters"): http://www.fcc.govt/rfsafety/

World Health Organization (WHO) International Commission on Non-Ionizing Radiation Protection (select Qs & As): http://www.who.int/emf

United Kingdom, National Radiological Protection Board: http://wwwnrpb.org.uk

Cellular Telecommunications Industry Association (CTIA): http://www.wow-com.com

U.S. Food and Drug Administration (FDA) Center for Devices and Radiological Health: http:www.fda.gov/cdrh/consumer/

Exposure to Radio Waves

THIS MODEL PHONE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg.* Tests for SAR are conducted using standard operating positions specified by the FCC with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

Before a phone model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure. The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model. The highest SAR value for this model phone when tested for use at the ear is 0.931 W/kg and when worn on the body, as described in this user guide, is 0.251 W/kg.
Body-worn Operation ; This device was tested for typical body-worn operations with the back of the phone kept 1.5 cm from the

body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain a 1.5cm separation distance between the user's body and the back of the phone. The use of belt-clips, holsters and similar accessories should not contain metallic components in its assembly.
The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.
While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement for safe exposure.

The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF emission guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid after searching on FCC ID APYHRO00027.

Additional information on Specific Absorption Rates (SAR) can be found on the Cellular Telecommunications Industry Association (CTIA) web-site at http://www.wow-com.com.

* In the United States and Canada, the SAR limit for mobile phones used by the public is 1.6 watts/kg (W/kg) averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements.