



## MOBILE PHONE SAFETY FACTSHEET

### INTRODUCTION

Concern has been voiced for several years about the safety of mobile phones, including *cellular phones and PCS phones*. The following information summarizes what is and isn't known at the present time concerning whether these phones can pose a radiation health hazard, and what can be done to minimize any potential risk.

### BACKGROUND

Mobile phones, which are used by about 80 million Americans, emit low levels of radiofrequency radiation (RF), which is somewhat similar to the radiation generated inside microwave ovens and by radars, but very much lower in intensity. These phones emit RF at all times, but the emitted power is much higher when the phones are being used than when they are in the stand-by mode.

Much of the health concern is related to use of the hand-held phones, the kind with a built-in antenna that is positioned very near to a person's head during a phone conversation. The exposure to RF is much lower with phones that have antennas located farther from the user, such as with car-mounted antennas, because a person's RF exposure decreases very rapidly with distance from the antenna. [The safety of so-called cordless phones, which have a base unit connected to the telephone wiring in a house and which operate at much lower power levels and radiation frequencies, has not been questioned.]

### HEALTH ISSUES

It is known that high levels of RF can produce biological damage due to heating effects. But it is not known whether, to what extent, and through what mechanism (if any) low levels of RF might cause biological effects. Although some research has been performed to answer these questions, no clear picture of the biological effects of this type of radiation has emerged to date. Therefore, our current knowledge does not permit us to state that mobile phones are absolutely safe, or that they are unsafe. *But available scientific evidence does not demonstrate any significant adverse health effects (no increased risk of brain cancer, etc.) associated with the use of mobile phones.*

### RF EMISSION LEVELS

The unit used to measure the radiation emitted by mobile phones is the specific absorption rate (SAR), in units of Watts of power absorbed per kilogram of tissue (W/kg). The permissible limit set for mobile phones by the US Federal Communications Commission (FCC) is 1.6 W/kg of RF.

The FCC has a database that includes RF emissions for most mobile phones on the market. To find out the SAR of your phone, you will need your phone's FCC ID number, which is usually located under the phone's battery pack next to the serial number. Once you know the FCC ID number, go to the following Web address: [www.fcc.gov/oet/fccid](http://www.fcc.gov/oet/fccid). Once you reach that page, you will only need to fill in the first two lines:

- “Grantee Code” is the first 3 letters of your FCC ID
- “Product Code” is the remaining numbers and letters of your FCC ID

If you click on “Start Search”, you will be able to determine the date your phone was authorized (granted) by the FCC. For phones authorized since June 2, 2000, the maximum SAR levels will be noted right there in the grant of equipment authorization. For phones authorized between mid-1998 and June 2, 2000, information on SAR levels is usually found in the exhibits associated with the grant of equipment authorization (click on “View Exhibits”). For phones authorized prior to mid-1998, it is likely that no SAR information will be available.

The result of your search will be a number between 0 and 1.6 W/kg. As mentioned before, this is a measure of the RF that your brain absorbs. Knowing that the FCC limit is 1.6 W/kg and that some low-radiation phones have SARs lower than 0.5 W/kg, you will be able to tell where your phone stands regarding RF emission.

### **REDUCING RF EXPOSURE**

If there is a RF risk from mobile phones, it is probably very small. But if you are interested in minimizing your potential risk, there are some simple steps that you can take:

- Purchase a phone with a low SAR rating
- Reduce the amount of time that you spend on the mobile phone – use a conventional phone whenever possible
- Switch to a type of mobile phone that has more distance between your body and the antenna, such as:
  - \* One that has the antenna located outside of your vehicle
  - \* A hand-held phone with a built-in antenna connected to a different antenna mounted outside of your vehicle, or built into a separate package.

**Note:** At one time it was thought that wearing a *headset* with a remote antenna to a mobile phone carried at the waist of the phone user would reduce the RF exposure of brain tissue. However, it is now believed by some that several varieties of headsets might actually increase the RF exposure since the earpieces of the headphones can act as aerials themselves and channel more radiation into the brain via the ear canals. In addition, use of a headset increases the exposure of other parts of the body, which may also produce health consequences (although no related health effects have been identified to date). There are a lot of body tissues (liver, kidneys) close to the waist that have good conductivity and absorb radiation more efficiently than the head/brain. **Thus, due to the uncertainty regarding the safety of using headsets, this method of RF exposure reduction is not currently recommended.**

## **MOBILE PHONE SHIELDS**

Always be cautious about devices claiming to protect you from the RF emitted by your mobile phone. Many experts believe that these devices make no sense. Some of the distributors of these devices make claims without providing any details, while others are more explicit. For more information, go to the following Web address: <http://www.wirelessnewsfactor.com/perl/story/16451.html>

## **PHYSICAL HAZARDS FROM MOBILE PHONE USE**

Although the radiation risk from the use of mobile telephones is probably small, there are other more serious hazards related to these phones. Many people use them while they are performing tasks that demand the user's complete attention. Following three general rules will help in reducing these hazards and make it easier to summon help in the event of an emergency:

- Avoid using a phone while driving or while operating dangerous equipment
- Program frequently used numbers into the phone
- Make sure 911 is programmed into your phone

If it is absolutely necessary to use a mobile phone while driving a vehicle or using dangerous equipment, adhering to some simple rules will greatly reduce the likelihood of accidents. Make sure that you:

- Use a "hands-free" phone, if possible
- Don't try to figure out how to use features of the phone until it is safe (do that ahead of time)
- Don't use the phone at all while driving in bad weather conditions (rain, fog, etc.)
- Dial phone numbers only while at stop lights or stop signs
- Don't take notes or look up phone numbers
- Keep phone calls brief
- Practice using the phone prior to using it while driving

*If you have additional questions or concerns regarding mobile phone safety, contact Rick Mannix of EH&S by phone at 949-824-6098 or by email at [rkmannix@uci.edu](mailto:rkmannix@uci.edu)*