

LG

LIFE'S GOOD

LG KEYBO

USER GUIDE

Some of content in this user guide may be different from your phone depending on the software of the phone or your service provider. Features and specifications might be subject to change without prior notice.

Bluetooth QD ID B014326

Visit www.koodomobile.com/guides for the User Guide fully illustrated on how to use your phone. You can find it by clicking Help -> User Guides. Or go to LG website at http://ca.lgservice.com/index_b2c.jsp to browse it.

P/N: MMBB0293301 (1.0)

Getting Started With Your Phone

Installing the Battery

To install the battery, insert the top edge (opposite the battery contacts) of the battery into the opening on the back of the phone. Push the battery down gently until it clicks into place.

Removing the Battery

Turn power off. Slide the battery release latch away from the edge of the battery, then lift the edge of the battery to remove it.

Charging the Battery

WARNING!
› Use only the charger provided with the phone. Using any charger other than the one included with the LG KEYBO may damage your phone or battery.

1. Plug the end of the AC adapter into the phone's charger port and the other end into an electrical outlet.
2. The charge time varies depending upon the battery level.

NOTICE
Please make sure that the LG logo faces down before inserting a charger or data cable into the charger port of your phone.

Listen to music everywhere!

The LG KEYBO is equipped with a special 'Media Mode'. This feature will turn off radio transmissions except for Bluetooth. Media Mode should be used in places where RF is prohibited, such as aboard airplanes and in hospitals, or if you just want to enjoy your music without interruptions.

Tip
› MENU > Settings > Phone Settings > Media Mode

Notes
› During this time you will be unable to use network services such as send/receive calls, send/receive messages, or browse the wireless web. However, you will be able to place emergency calls.

Phone Overview

Diagram of the LG KEYBO phone showing various keys and ports with labels:

- Speakers
- Left Soft Key
- * Shortcut key
- Sym Key
- Shift Key
- Space Key
- Alphanumeric Keypad
- Space/Voice Commands Key
- Return Key
- Right Soft Key
- SEND Key
- END/PWR Key
- OK/Menu Key
- Directional Keys
- Speakerphone Key
- CLR Key
- Return Key
- Camera Lens
- Used to take a photo. Keep it clean for optimal photo quality.
- Camera key
- Press for photo mode. Press and hold for video mode.
- Side Volume Keys
- In standby mode: Controls ringer volume
- 2.5mm headset jack
- microSD™ slot (expandable to 8GB)
- Charger/USB Port
- Lock Mode Key
- Keyguard key
- When the external keys are unlocked, press and hold this key for 3 seconds to set keyguard.
- Use to lock phone with 4-digit password.
- Use to enter numbers and characters and select menu items.
- Use to set the mode (from the standby mode press and hold for 3 seconds).
- Use to take a photo. Keep it clean for optimal photo quality.
- Use to lock phone with 4-digit password.

Turning the Phone On and Off

Turning the Phone On

1. Install a charged battery or connect the phone to an external power source.
2. Press for a few seconds until the LCD screen lights up.

Turning the Phone Off

1. Press and hold until the display turns off.

Making Calls

Note
› To activate the speakerphone during a call, simply open the flip.

1. Unlock the screen by pressing twice.
2. Enter the phone number (include the area code if needed).
3. Press the key.
4. Press the key to end the call.

Receiving Calls

1. When the phone rings or vibrates, there are four ways of answering a call, depending on the Answer Options in Call Settings menu:
Notes
› If you press Left Soft Key **Quiet** while the phone is ringing, the ringing or vibration is muted for that call.
› If you press Right Soft Key **Ignore** while the phone is ringing, the call will be sent to voicemail.
2. When the phone rings or vibrates, press the key.
3. Press the key to end the call.

Vibrate Mode

Sets the phone to vibrate instead of ring (is displayed). To set Vibrate Mode, press and hold on the internal keypad, or on the external keypad (after unlocking the phone by pressing twice, if locked).

To return to Normal Mode, press and hold again on the internal keypad, or Key again on the external keypad.

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- Use to lock phone with 4-digit password.

*Shortcut key

Use this Shortcut key for convenient access to a list of 10 customizable shortcuts.

1. With the flip open, press the Key.
2. Use the number keys to select the shortcut you want to access.

Connecting to your PC

A USB cable (sold separately) is required to connect your LG KEYBO to your PC. To connect to your PC, you will need a microSD memory card inserted into the memory card slot on your LG KEYBO.

Its easy!

1. Insert microSD card into the microSD slot.
2. Format your memory card* (MENU > Settings > Memory > Card Memory > Options > Format > Enter Lock Code (last 4-digits of your mobile phone number).
- To connect your phone to your PC via USB cable, simply:
 1. Insert a microSD card into your LG KEYBO and format the card using the directions above.
 2. Connect the device to your PC using the included USB cable.
 3. Click cancel on the Found New Hardware Wizard. Mass storage mode will then be initiated.

Now you are ready to transfer media from your PC to your phone!

Notes

- › Formatting your memory card will create all of the required folders, but erase any previously stored data.
- › It is important to complete this step before attempting to transfer media to your phone.

Bluetooth®

The LG KEYBO is compatible with devices that support the Bluetooth® Headset, Handsfree, Stereo, Phonebook Access, Basic Printing, Object Push, File Transfer, Basic Imaging.

You may create and store 20 pairings within the LG KEYBO and connect to one device at a time.

The approximate communication range for Bluetooth® wireless technology is up to 30 feet (10 meters).

Notes

- › Read the user guide of each Bluetooth® accessory that you are trying to pair with your phone because the instructions may be different.
- › Your phone is based on the Bluetooth® specification, but it is not guaranteed to work with all devices enabled with Bluetooth® wireless technology. Phone does not support ALL Bluetooth® OBEX Profiles.

Menus Overview

1. Contacts

1. Contact List
2. New Contact
3. Groups
4. Speed Dials
5. My Name Card

2. Call History

1. Missed Calls
2. Received Calls
3. Dialed Calls
4. All Calls
5. View Call Timers

3. Messaging

1. Voicemail
2. Create Message
3. Inbox
4. Sent
5. Drafts
6. Web Alerts

4. Wireless Web

1. Launch Web
2. Bookmarks
3. Go to Site

5. Extras

1. Ringtones & Sounds
2. Images & Videos
3. Memory

6. Music Player

1. Music Player

7. Tools

1. Bluetooth Menu
2. USB Mass Storage
3. Voice Recorder
4. Voice Commands
5. Calculator
6. Calendar
7. Alarm Clock
8. Stopwatch
9. World Clock

8. Camera

1. Take Picture
2. Record Videos
3. Picture
4. Videos

9. Settings

1. Sound Settings
2. Display Settings
3. Phone Settings
4. Call Settings
5. Memory
6. Phone Info

10. Notepad

11. Ez Tip Calc

Menu Access

To use phone menus, press or Left Soft Key using Navigation Key to highlight and select. Press the number key that corresponds to the submenu.

Music Player

Launches the Music Player.

1. Open the flip and press [MENU].
2. Press Music Player.
3. Use the keys to adjust volume when a song is playing.
4. Select **Options**, then select:
Music Info/ Erase/ Erase All/ Move

How to Use Menus

This section provides a quick glance of features on your phone.

Contacts Menu 1	
The Contacts Menu allows you to store names, phone numbers and other information in your phone's memory.	
Contact List	Allows you to view your Contact List.
New Contact	Allows you to add a new number to your Contact List.
Groups	Allows you to view your grouped Contacts, add a new group, change the name of a group, delete a group, or send a message to everyone in the selected group.
Speed Dials	Allows you to view your list of Speed Dials or designate Speed Dials for numbers entered in your Contacts.
My Name Card	Allows you to view all of your own Contact information including name, phone numbers, and email address.
Call History Menu 2	
The Recent Calls Menu is a list of the last phone numbers or Contact entries for calls you placed, accepted, or missed. It's continually updated as new numbers are added to the beginning of the list and the oldest entries are removed from the bottom of the list.	
Missed Calls	Allows you to view the list of missed calls; up to 90 entries.
Received Calls	Allows you to view the list of incoming calls; up to 90 entries.
Dialed Calls	Allows you to view the list of outgoing calls; up to 90 entries.
All Calls	Allows you to view the list of all calls; up to 270 entries.
View Call Timers	Allows you to view the duration of selected calls.

Messaging	Menu 3
Voice mail	Allows you to view the number of new voice messages recorded in the Voice mail box. When you have a new voice message, your phone will alert you.
Create Message	Allows you to create a message with Text, Picture/Video and Sound and send it. The limit number of receivers and subject length of your message is displayed on the phone, but it may vary depending the type of your message.
Inbox	Your phone will alert you when you have new messages.
Sent	Up to 50 sent messages can be stored.
Drafts	Displays messages started, but not yet sent.
Web Alerts	Allows you to store the received web alerts in a separate folder.

Wireless Web Menu 4

The Wireless Web feature allows you to view Internet content, especially designed for your mobile phone.

Launch Web	Allows you to initiate an Wireless Web session to the Home Page.
Bookmarks	List bookmarks to directly access your favorite sites.
Go to Site	Allows you to initiate an Wireless Web session to the URL you entered.

Extras Menu 5

Extras allows you to use your phone for more than just talking. In this section of the menu you have access to Ringtone & Sounds, Image & Videos and Memory. Downloaded ringtones and images are stored here.

Ringtones & Sounds/ Images & Videos/ Memory

Safety

TIA(Telecommunications Industry Association) Safety Information
The following is the complete TIA Safety Information for wireless handheld phones.

Exposure to Radio Frequency Signal

Your wireless handheld portable phone 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 handheld 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)
- Health Canada, Safety Code 6, 1999.

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, IC Regulations (and those standards).

Antenna Care

Use only the supplied or an approved replacement antenna. Unauthorised 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 with the antenna pointed up and over your shoulder.

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 ireless phones in the areas where you drive and always obey them. Also, if using your phone while

driving, please observe the following:
• 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 or the law 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.

Packmakers

The Health Industry Manufacturers Association recommends that a minimum separation of six inches be maintained between a handheld wireless phone and a packmaker to avoid potential interference with the packmaker. 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 packmaker when the phone is turned ON;
- Should not carry the phone in a breast pocket;
- Should use the ear opposite the packmaker to minimize the potential for interference;
- Should turn the phone OFF immediately if there is any reason to suspect that interference is taking place.

Hearing Aids

Some digital wireless phones may interfere with some hearing aids. In the event of such interference, you may want to consult your service provider (or call the customer service line to discuss alternatives.) Optional for each phone manufacturer.

Other Medical Devices

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

Health Care Facilities

Turn your phone OFF in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care

Music Player Menu 6

Music Player Allows you to play music stored on a microSD card (sold seperately).

Tools Menu 7

Allows you to make use of various tools and applications.

Bluetooth Menu/ USB Mass Storage/ Voice Recorder/ Voice Commands/ Calculator/ Calendar/ Alarm Clock/ Stopwatch/ World Clock/ Notepad/ Ez Tip Calc

Camera Menu 8

Take Pictures Allows you to take pictures.

Record Videos Allows you to record videos.

Pictures You can select images to customize the main screen, the screen before the photos or identification of your phone.

Videos Allow you to choose video clips.

Settings Menu 9

The Settings Menu has options to customize your phone.

Sound Settings/ Display Settings/ Phone Settings/ Call Settings/ Memory/ Phone Info

Safety (Continued)

facilities may use 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 and Transport Canada 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 Atmosphere

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 marked clearly. Potential areas may 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 either 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.

Charger and Adapter Safety

- The charger and adapter are intended for indoor use only.
- Do not expose the battery charger or adapter to direct sunlight or use it in places with high humidity, such as a bathroom.

Battery Information and Care

- Please dispose of your battery properly or take it to your local

wireless carrier for recycling.

- Do not dispose of your battery by fire with hazardous or flammable materials.
- Never use an unapproved battery since this could damage the phone and/or battery and could cause the battery to explode.
- The battery does not need to be fully discharged before recharging.
- Use only LG-approved chargers specific to your phone model since they are designed to maximize battery life.
- Do not disassemble or shortcircuit the battery.
- Keep the battery's metal contacts clean.
- Replace the battery when it no longer provides acceptable performance. The battery can be recharged several hundred times before replacement.
- Recharge the battery after long periods of non-use to maximize battery life.
- Battery life will vary due to usage patterns and environmental conditions.
- Use of extended backlighting, MiniBrowser, and data connectivity kits affect battery life and talk/standby times.

Safety Information

Please read and observe the following information for safe and proper use of your phone, and obey all signs and instructions. There is a risk of this causing a fire.

Explosion, Shock, and Fire Hazards

- Unplug the power cord and charger during lightning storms to avoid electric shock or fire.
- Make sure that no sharp-edged items such as animal's teeth, nails, come into contact with the battery. There is a risk of this causing a fire.
- Do not use harsh chemicals(such as alcohol, benzene, thinners, etc.) or detergents to clean your phone. There is a risk of this causing a fire.
- Do not handle the phone with wet hands while it is being charged. It may cause an electric shock or seriously damage your phone.
- Do not drop, strike, or shake your phone severely. Such actions may harm the internal circuit boards of the phone.
- Do not put your phone in a place subject to excessive dust and keep the minimum required distance between the power cord and heat sources.
- Unplug the power cord prior to cleaning your phone, and clean the power plug pin when it is dirty.
- Do not damage the power cord by bending, twisting, pulling, or heating. Do not use the plug if it is loose as it may cause a fire or electric shock.
- When using the power plug, ensure that it is firmly connected. If it is

Safety (Continued)

example, the government in the United Kingdom distributed leaflets containing such a recommendation in December 2000. They noted that no evidence exists that using a wireless phone causes brain tumors or other ill effects. Their recommendation to limit wireless phone use by children was strictly precautionary; it was not based on scientific evidence that any health hazard exists.

11. What about wireless phone interference with medical equipment?

Radio frequency energy (RF) from wireless phones can interact with some electronic devices. For this reason, the FDA helped develop a detailed test method to measure electromagnetic interference (EMI) of implanted cardiac pacemakers and defibrillators from wireless telephones. This test method is now part of a standard sponsored by the Association for the Advancement of Medical Instrumentation (AAMI). The final draft, a joint effort by the FDA, medical device manufacturers, and many other groups, was completed in late 2000. This standard will allow manufacturers to ensure that cardiac pacemakers and defibrillators are safe from wireless phone EMI. The FDA has tested hearing aids for interference from handheld wireless phones and helped develop a voluntary standard sponsored by the Institute of Electrical and Electronic Engineers (IEEE). This standard specifies test methods and performance requirements for hearing aids and wireless phones so that n-and a "compatible" hearing aid at the same time. This standard was approved by the IEEE in 2000. The FDA continues to monitor the use of wireless phones for possible interactions with other medical devices. Should harmful interference be found to occur, the FDA will conduct testing to assess the interference and work to resolve the problem.

12. Where can I find additional information?

For additional information, please refer to the following resources: FDA web page on wireless phones (<http://www.fda.gov/cellphones/>) Federal Communications Commission (FCC) RF Safety Program (<http://www.fcc.gov/oet/rfsafety/>) International Commission on Non-Ionizing Radiation Protection (<http://www.icnirp.de>) World Health Organization (WHO) International EMF Project (<http://www.who.int/peh-emf/en/>) National Radiological Protection Board (UK) (<http://www.hpa.org.uk/radiation/>)

Consumer Information on SAR

(Specific Absorption Rate)
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

Important Safety Precautions and Warranty Information

Read these simple guidelines. Breaking the rules may be dangerous or illegal. Further detailed information is given in this user guide.

WARNING! Violation of the instructions may cause serious injury or death.



- Never use an unapproved battery since this could damage the phone and/or battery and could cause the battery to explode.



- Never place your phone in a microwave oven as it will cause the battery to explode.
- Never store your phone in temperatures less than -4°F or greater than 122°F.



- Do not dispose of your battery by fire or with hazardous or flammable materials.
- When riding in a car, do not leave your phone or set up the hands-free kit near to the air bag. If wireless equipment is improperly installed and the air bag is deployed, you may be seriously injured.



- Do not use a hand-held phone while driving.



- Do not use the phone in areas where its use is prohibited. (For example: aircraft, hospital)
- Do not expose the battery charger or adapter to direct sunlight or use it in places with high humidity, such as a bathroom.



- Do not use harsh chemicals (such as alcohol, benzene, thinners, etc.) or detergents to clean your phone. This could cause a fire.



- Do not drop, strike, or shake your phone severely. It may harm the internal circuit boards of the phone.



- Do not use your phone in high explosive areas as the phone may generate sparks.



- Do not damage the power cord by bending, twisting, pulling, or heating. Do not use the plug if it is loose as it may cause a fire or electric shock.



- Do not place any heavy items on the power cord. Do not allow the power cord to be crimped as it may cause electric shock or fire.



- Do not handle the phone with wet hands while it is being charged. It may cause an electric shock or seriously damage your phone.



- Do not disassemble the phone.

Safety (Continued)

not, it may cause excessive heat or fire.

- Do not place any heavy items on the power cord. Do not allow the power cord to be crimped as it may cause fire or electric shock.
- Do not disassemble the phone.
- Do not place or answer calls while charging the phone as it may short-circuit the phone and/or cause electric shock or fire.
- If you put your phone in a pocket or bag without covering the receptacle of the phone (metal strips on the battery) upon moving. Short-circuit of the terminal may damage the battery and cause an explosion.
- Never place your phone in a microwave oven as it will cause the battery to explode.

General Warnings and Cautions

- Only use the batteries, antennas, and chargers provided by LG. The warranty will not be applied to products provided by other suppliers.
- Store the battery in a place out of reach of children.
- Using a damaged battery or placing a battery in your mouth may cause serious injury.
- Do not place items containing magnetic components such as a credit card, phone card, bank book or subway ticket near your phone. The magnetism of the phone may damage the data stored in the magnetic strip.
- Do not hold or let the antenna come in contact with your body during a call.
- Talking on your phone for a long period of time may reduce call quality due to heat generated during use.
- When the phone is not used for a long period time, store it in a safe place with the power cord unplugged.
- Using the phone in proximity to receiving equipment (i.e., TV or radio) may cause interference to the phone.
- Only authorized personnel should service the phone and its accessories. Faulty installation or service may result in accidents and consequently invalidate the warranty.
- Do not use the phone if the antenna is damaged. If a damaged antenna contacts skin, it may cause a slight burn. Please contact an LG Authorized Service Center to replace the damaged antenna.
- Do not use the phone in areas where its use is prohibited. (For example: aircraft)
- Do not immerse your phone in water. If this happens, turn it off immediately and remove the battery. If the phone does not work, take it to an LG Authorized Service Center.

FCC Part 15 Class B Compliance

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

Industry Canada Compliance

This phone complies with Industry Canada RSS 133. This phone complies with the Class B limits for radio noise emissions as set out in the interference causing standard entitled "Digital Apparatus" (ICES-003) of Industry Canada.

FCC RF Exposure Information

WARNING! Read this information before operating the phone.

In August 1996, the Federal Communications Commission (FCC) of the United States, with its action in Report and Order FCC 96-326, adopted an updated safety standard for human exposure to Radio Frequency (RF) electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by U.S. Canada and international standards bodies. The design of this phone complies with the FCC guidelines and these international standards.

Bodily Contact During Operation

This device was tested for typical use with the back of the phone kept 0.6 inches (1.5 cm) from the body. To comply with FCC RF exposure requirements, a minimum separation distance of 0.6 inches (1.5 cm) must be maintained between the user's body and the back of the phone, including the antenna, whether extended or retracted. Third-party belt-clips, holsters and similar accessories containing metallic components should not be used. Avoid the use of accessories that cannot maintain 0.6 inches (1.5 cm) distance between the user's body and the back of the phone and have not been tested for compliance with FCC RF exposure limits.

Vehicle-Mounted External Antenna (Optional, if available.)

A minimum separation distance of 8 inches (20 cm) must be maintained between the user / bystander and the vehicle-mounted external antenna to satisfy FCC RF exposure requirements. For more information about RF exposure, visit the FCC website at www.fcc.gov.

Caution

Use only the supplied and approved antenna. Use of unauthorized antennas or modifications could impair call quality, damage the phone, void your warranty and/or result in violation of FCC regulations. Do not use the phone with a damaged antenna. If a damaged antenna comes in contact with the skin a minor burn may result. Contact your local dealer for a replacement antenna.

Safety (Continued)

Under the law, the FDA does not review the safety of radiation-emitting consumer products such as wireless phones before they can be sold, as it does with new drugs or medical devices. However, the FDA has authority to take action if wireless phones are shown to emit radiofrequency energy (RF) at a level that is hazardous to the user. In such a case, the FDA could require the manufacturers of wireless 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, the FDA has urged the wireless phone industry to take a number of steps, including the following:
• Support needed research into possible biological effects of RF of the type emitted by wireless phones.
• Design wireless phones in a way that minimizes any RF exposure to the user that is not necessary for device function; and cooperate in providing users of wireless phones with the best possible information on possible effects of wireless phone use on human health.

The FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of RF safety to ensure coordinated efforts at the federal level. The following agencies belong to this working group:
• National Institute for Occupational Safety and Health
• Environmental Protection Agency
• Occupational Safety and Health Administration
• National Telecommunications and Information Administration
The National Institutes of Health participates in some interagency working group activities, as well. The FDA shares regulatory responsibilities for wireless phones with the Federal Communications Commission (FCC). All phones that are sold in the United States must comply with FCC safety guidelines that limit RF exposure. The FCC relies on the FDA and other health agencies for safety questions about wireless phones. The FCC also regulates the base stations that the wireless phone networks rely upon. While these base stations operate at higher power than do the wireless phones themselves, the RF exposures that people get from these base stations are typically thousands of times lower than those they can get from wireless phones. Base stations are thus not the subject of the safety questions discussed in this document.

3. What kinds of phones are the subject of this update?

The term "wireless phone" refers here to handheld wireless phones with built-in antennas, often called "cell," "mobile," or "PCS" phones. These types of wireless phones can expose the user to measurable radiofrequency energy (RF) because of the short distance between the phone and the user's head. These RF exposures are limited by FCC safety guidelines that were developed with the advice of the

FDA and other federal health and safety agencies. When the phone is located at greater distances from the user, the exposure to RF is drastically lower because a person's RF exposure decreases rapidly with increasing distance from the source. The so called "cordless phones," which have a base unit connected to the telephone wiring in a house, typically operate at far lower power levels, and thus produce RF exposures far below the FCC safety limits.

4. What are the results of the research done already?

The research done so far has produced conflicting results, and many studies have suffered from flaws in their research methods. Animal experiments investigating the effects of radiofrequency energy (RF) exposures characteristic of wireless phones have yielded conflicting results that often cannot be repeated in other laboratories. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. However, many of the studies that showed increased tumor development used animals that had been genetically engineered or treated with cancer-causing chemicals so as to be pre-disposed to develop cancer in the absence of RF exposure. Other studies exposed the animals to RF for up to 22 hours per day. These conditions are not similar to the conditions under which people use wireless phones, so we don't know with certainty what the results of such studies mean for human health. Three large epidemiology studies have been published since December 2000. Between them, the studies investigated any possible association between the use of wireless phones and primary brain cancer, glioma, meningioma, or acoustic neuroma, tumors of the brain or salivary gland, leukemia, or other cancers. None of the studies demonstrated the existence of any harmful health effects from wireless phone RF exposures. However, none of the studies can answer questions about long-term exposures, since the average period of phone use in these studies was around three years.

5. What research is needed to decide whether RF exposure from wireless phones poses a health risk?

A combination of laboratory studies and epidemiological studies of people actually using wireless phones would provide some of the data that are needed. Lifetime animal exposure studies could be completed in a few years. However, very large numbers of animals would be needed to even remotely prove the existence of a cancer-promoting effect if one exists. Epidemiological studies can provide data that is directly applicable to human populations, but 10 or more years follow-up may be needed to provide answers about some health effects, such as cancer. This is because the interval between the time of exposure to a cancer-causing agent and the time tumors develop — if they do — may be many, many years. The interpretation of epidemiological studies is hampered by difficulties in measuring actual RF exposure during day-to-day use of wireless phones. Many

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