

XAVIER BECERRA
Attorney General

State of California
DEPARTMENT OF JUSTICE



1300 I STREET, SUITE 125
P.O. BOX 944255
SACRAMENTO, CA 94244-2550

Public: (916) 445-9555
Telephone: (916) 327-7872
Facsimile: (916) 324-5567
E-Mail: Lisa.Tillman@doj.ca.gov

May 12, 2017

Claudia Polsky, Esq.
Environmental Law Clinic
U.C. Berkeley School of Law
434 Boalt Hall (North Addition)
Berkeley, California 94720-7200

Via Overnight Mail

James Wheaton, Esq.
First Amendment Project
1736 Franklin Street, 9th Floor
Oakland, CA 94612

RE: *Dr. Joel Moskowitz v. California Department of Public Health*
Superior Court of California, County of Sacramento, Case No. 34-2016-80002358

Dear Ms. Polsky and Mr. Wheaton:

In accord with the Court's order in this matter and as we discussed, please find enclosed a copy of the California Department of Public Health's Notice of Lodging with documents bated stamped from AGO001-113.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lisa Tillman".

LISA A. TILLMAN
Deputy Attorney General

For XAVIER BECERRA
Attorney General

Enclosure

SA2016102458
12687631.doc

1 XAVIER BECERRA
Attorney General of California
2 ISMAEL A. CASTRO
Supervising Deputy Attorney General
3 LISA A. TILLMAN
Deputy Attorney General
4 State Bar No. 126424
1300 I Street, Suite 125
5 P.O. Box 944255
Sacramento, CA 94244-2550
6 Telephone: (916) 327-7872
Fax: (916) 324-5567
7 E-mail: Lisa.Tillman@doj.ca.gov
Attorneys for California Department of Public
8 Health

9 SUPERIOR COURT OF THE STATE OF CALIFORNIA
10 COUNTY OF SACRAMENTO
11
12

13 **DR. JOEL MOSKOWITZ, an individual,**
14
Petitioner and Plaintiff,
15
v.
16
CALIFORNIA DEPARTMENT OF
17 **PUBLIC HEALTH, a California State**
18 **Agency,**
19
Respondents and
20 Defendants.

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF
PUBLIC HEALTH'S NOTICE OF
LODGING RE. PUBLIC RECORDS ACT
REQUEST**

Date: February 24, 2017
Time: 11:00 a.m.
Dept: 24
Judge: Shellyanne W.L. Chang
Action Filed: June 9, 2016

21 Without waiving its stated objections, California Department of Public Health hereby
22 lodges for in-camera review bate-stamped copies of the 27 documents responsive to Dr.
23 Moskowitz's Public Records Act requests.¹

24 //

25 //

26 //

27 ¹ Where a document contains track changes, the document is produced with the track
28 changes evident.

The computer file name, and bate stamp, of each document is as follows:²

1	1	Cell Phones 1-26-15 with water mark.pdf	AGO-002
2	2	Cell Phones [redacted] ³ draft 2_3_11.pdf	AGO-005
3	3	Cell Phones _edited 040414.pdf	AGO-008
4	4	Cell Phone Guidance.4-30-13.pdf	AGO-011
5	5	Cell Phones.4-30-13.pdf	AGO-014
6	6	Cell Phones Health and Safety Revised v.2.pdf	AGO-017
7	7	Cell Phones Health and Safety Revised v.1.pdf	AGO-020
8	8	Cell Phones.4-20b.pdf	AGO-023
9	9	Cell Phones.3-4-11.pdf	AGO-027
10	10	Cell Phones 2-2-11 without cordless.pdf	AGO-031
11	11	Cell Phones.2-2-11 with cordless.pdf	AGO-035
12	12	Cell Phones.4-1.pdf	AGO-039
13	13	Cell Phones 3-25.pdf	AGO-043
14	14	Cell Phones 3-25.pdf	AGO-047
15	15	Cell Phones 2-18.pdf	AGO-051
16	16	Cell Phones 1-19.pdf	AGO-055
17	17	Cell Phones 1-5-10.doc	AGO-059
18	18	Cell Phones 12-17-09.doc	AGO-064
19	19	Cell Phones 12-13-09_ML.doc	AGO-070
20	20	Cell Phones 12-13-09.doc	AGO-075
21	21	Cell Phones _12-1 all changes accepted.doc	AGO-080
22	22	Cell Phones _12-1.doc	AGO-085
23	23	Cell Phones _12-1LW.doc	AGO-090
24	24	Cell Phones.11-24b.pdf	AGO-095

² The computer file name does not always match the date on the document.

³ This portion of the file name was redacted to preserve the deliberative process privilege.

25	Cell Phone Tech Doc 06 17 09.doc	AGO-100
26	Cell Precautions 2 SE edits and comments.doc	AGO-106
27	Cell Precautions2.doc	AGO-111

Dated: February 22, 2017

Respectfully Submitted,

XAVIER BECERRA
Attorney General of California
ISMAEL A. CASTRO
Supervising Deputy Attorney General



LISA A. TILLMAN
Deputy Attorney General
*Attorneys for California Department
of Public Health*

SA2016102458
12596496.doc

DECLARATION OF SERVICE BY E-MAIL

Case Name: **Dr. Joel Moskowitz v. California Department of Public Health**
No.: **34-2016-80002358**

I declare:

I am employed in the Office of the Attorney General, which is the office of a member of the California State Bar, at which member's direction this service is made. I am 18 years of age or older and not a party to this matter. I am familiar with the business practice at the Office of the Attorney General for collection and processing of correspondence for mailing with the United States Postal Service.

On February 22, 2017, I served the below listed documents:

1. California Department of Public Health's Notice of Lodging Re: Public Records Act Request

by transmitting a true copy via electronic mail, addressed as follows:

Claudia Polsky, Esquire
Environmental Law Clinic
U.C. Berkeley School of Law
434 Boalt Hall (North Addition)
Berkeley, California 94720-7200
E-mail Address:
cpolsky@law.berkeley.edu
Attorneys for Petitioner

James R. Wheaton
Attorney at Law
First Amendment Project
1736 Franklin Street, 9th Floor
Oakland, CA 94612
E-mail Address:
wheaton@thefirstamendment.org
Attorneys for Petitioner

Cherokee Melton
First Amendment Project
1736 Franklin Street, 9th Floor
Oakland, CA 94612
E-mail Address:
cmelton@thefirstamendment.org
Attorneys for Petitioner

Nicole Feliciano
First Amendment Project
1736 Franklin Street, 9th Floor
Oakland, CA 94612
E-mail Address:
nicfeliciano@thefirstamendment.org
Paralegal - courtesy copy

I declare under penalty of perjury under the laws of the State of California the foregoing is true and correct and that this declaration was executed on February 22, 2017, at Sacramento, California.

J. Hutcherson
Declarant


Signature

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE,
PUBLIC RECORD ACT REQUEST**

DOCUMENT 1



Cell Phones and Health

Cell phones, like other electronic devices, emit a kind of energy called radiofrequency EMFs (electromagnetic fields). Health officials are concerned about possible health effects from cell phone EMFs because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer and other health problems. For those concerned about possible health problems, this fact sheet provides information about how to lower exposure to EMFs from cell phones.

What do we know about cell phones and health?



Several studies have found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head that

people usually held their phones. Although the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing some kinds of brain cancer. Some studies have also linked exposure to EMFs from cell phones to fertility problems. As more studies are done and we learn more about possible risks for cancer and other health problems linked to cell phone use, the recommendations on this fact sheet may change.

EMF exposure from cell phones

Your exposure to cell phone EMFs depends mostly on your distance from the phone, the strength of the EMF, and how long and how often you use the phone. The farther away the phone is from your body, the lower the exposure. Your cell phone produces stronger EMFs at the start of a call, when it is trying to connect to a cell tower, and also when only one or two bars are showing. Your phone also emits stronger EMFs when used in a moving car, bus, or train, as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices. Some devices, such as watches, create weak EMFs that are considered harmless. Others, like X-ray machines, generate very strong EMFs that can damage cells and tissue and cause cancer and other health effects. This is why we try to only use X-rays when necessary. Cell phones make relatively weak EMFs, somewhat less than those from microwave ovens, but because they are used frequently and kept close to the head and body, cell phone EMFs can affect nearby cells and tissues.



What can I do to reduce my exposures to EMFs from cell phones?

To lower your exposure to EMFs from cell phones:

Increase the distance between you and your phone by:

- **Using the speaker phone.**
- **Sending text messages.**
- **Use a headset and carry your phone away from your body.** EMFs from wireless (Bluetooth) and wired headsets are usually weaker than those from a cell phone.
- **Keep your phone away from your body.** A cell phone that is on can emit EMFs even when it is not being used. Do not sleep with your cell phone near you or carry it in a pocket or directly on your body unless the phone is turned off.

Limit your cell phone use when reception is weak or increase the distance between you and the phone. When your phone shows only one or two bars, it is emitting stronger EMFs than when three, four, or five bars are showing.

Reduce the amount of time spent talking on a cell phone.

- **Keep cell phone calls short**, even when using a wireless or wired headset.
- **Use speaker phone mode or a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off your headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures.

What about cell phone EMFs and children?

EMFs can pass deeper into a child's brain than an adult's. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Pregnant women, children, and teens can also follow the tips for reducing exposure listed above.



Where can I get more information?

For more information about EMF exposures and cell phones, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 2



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak and some, like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using cell phones for a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

Cell Phones and Safe Driving

According to the California Office of Traffic Safety, driver distraction is involved in 80% of vehicle crashes. A common form of driver distraction is talking on a cell phone or texting. To reduce the number of driving-related injuries and deaths due to driver distraction, California has passed strict cell phone laws.

- Adult drivers cannot text or talk on a cell phone without using a hands-free device, such as a headset or speakerphone.
- Teens under age 18 are not allowed to use cell phones at all while driving.

However, because recent studies suggest that hands-free devices do not necessarily reduce driver distraction, CDPH recommends that drivers of all ages not use cell phones while driving.

What can I do to reduce my exposures to EMFs from cell phones?

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from wireless and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Do not use your cell phone when reception is poor. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are shown.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a wireless or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 3



Cell Phones and Health

Cell phones, like other electronic devices, emit a kind of energy called radiofrequency EMFs (electromagnetic fields). Some recent studies point to possible health effects from cell phone EMFs. These studies suggest that long-term cell phone use may increase the risk of brain cancer and other health problems. For those concerned about possible health problems, this fact sheet provides information about how to lower exposure to EMFs from cell phones.

What do we know about cell phones and health?



Several studies have found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head that people usually held their phones. Although the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing some kinds of brain cancer. Some studies have also linked exposure to EMFs from cell phones to fertility problems. However, these links to cancer or fertility are not definitive. More research is needed. As more studies are done and we learn more about possible risks for cancer and other health problems linked to cell phone use, the recommendations on this fact sheet may change.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices. Some devices, such as watches, create weak EMFs that are considered harmless. Others, like X-ray machines, generate very strong EMFs that can damage cells and tissues and cause cancer and other health effects. This is why we try to only use X-rays when necessary. Cell phones make relatively weak EMFs, somewhat less than those from microwave ovens, but because they are used frequently and kept close to the head and body, cell phone EMFs can affect nearby cells and tissues.

EMF exposure from cell phones

Your exposure to cell phone EMFs depends mostly on your distance from the phone, the strength of the EMF, and how long and how often you use the phone. The farther away the phone is from your body, the lower the exposure. Your cell phone produces stronger EMFs at the start of a call, when it is trying to connect to a cell tower, and also when only one or two bars are showing. Your phone also emits stronger EMFs when used in a moving car, bus, or train, as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

What can I do to reduce my exposures to EMFs from cell phones?

To lower your exposure to EMFs from cell phones:

Increase the distance between you and your phone by:

- **Using the speaker phone.**
- **Sending text messages.**
- **Use a headset and carry your phone away from your body.** EMFs from wireless (Bluetooth) and wired headsets are usually weaker than those from a cell phone.
- **Keep your phone away from your body.** A cell phone that is on can emit EMFs even when it is not being used. Do not sleep with your cell phone near you or carry it in a pocket or directly on your body unless the phone is turned off.

Limit your cell phone use when reception is weak or increase the distance between you and the phone. When your phone shows only one or two bars, it is emitting stronger EMFs than when three, four, or five bars are showing.

Reduce the amount of time spent talking on a cell phone.

- **Keep cell phone calls short**, even when using a wireless or wired headset.
- **Use speaker phone mode or a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off your headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures.

What about cell phone EMFs and children?

Children who start using cell phones earlier will be exposed for a longer time. EMFs can pass deeper into a child's brain than an adult's. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. There are no studies that have looked at cell phone use and cancer risk in children. Parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Pregnant women, children, and teens can also follow the tips for reducing exposure listed above.



Where can I get more information?

For more information about EMF exposures and cell phones, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 4



Cell Phones and Health

Cell phones, like other electronic devices, emit a kind of energy called radiofrequency EMFs (electromagnetic fields). Health officials are concerned about possible health effects from cell phone EMFs because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer and other health problems. For those concerned about possible health problems, this fact sheet provides information about how to lower exposure to EMFs from cell phones.

What do we know about cell phones and health?



Several studies have found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head that

people usually held their phones. Although the chance of developing brain cancer is very small, these studies suggest that regular cell

phone use increases the risk of developing some kinds of brain cancer. Some studies have also linked exposure to EMFs from cell phones to fertility problems. As more studies are done and we learn more about possible risks for cancer and other health problems linked to cell phone use, the recommendations on this fact sheet may change.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices. Some devices, such as watches, create weak EMFs that are considered harmless. Others, like X-ray machines, generate very strong EMFs that can damage cells and tissues and cause cancer and other health effects. This is why we try to only use X-rays when necessary. Cell phones make relatively weak EMFs, somewhat less than those from microwaves ovens, but because they are used frequently and kept close to the head and body, cell phone EMFs can affect nearby cells and tissues.

EMF exposure from cell phones

Your exposure to cell phone EMFs depends mostly on your distance from the phone, the strength of the EMF, and how long and how often you use the phone. The farther away the phone is from your body, the lower the exposure. Your cell phone produces stronger EMFs at the start of a call, when it is trying to connect to a cell tower, and also when only one or two bars are showing. Your phone also emits stronger EMFs when used in a moving car, bus, or train, as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

What can I do to reduce my exposures to EMFs from cell phones?

To lower your exposure to EMFs from cell phones:

Increase the distance between you and your phone by:

- **Using the speaker phone.**
- **Sending text messages.**
- **Use a headset and carry your phone away from your body.** EMFs from wireless (Bluetooth) and wired headsets are usually weaker than those from a cell phone.
- **Keep your phone away from your body.** A cell phone that is on can emit EMFs even when it is not being used. Do not sleep with your cell phone near you or carry it in a pocket or directly on your body unless the phone is turned off.

Limit your cell phone use when reception is weak or increase the distance between you and the phone. When your phone shows only one or two bars, it is emitting stronger EMFs than when three, four, or five bars are showing.

Reduce the amount of time spent talking on a cell phone.

- **Keep cell phone calls short,** even when using a wireless or wired headset.
- **Use speaker phone mode or a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off your headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures.

What about cell phone EMFs and children?

EMFs can pass deeper into a child's brain than an adult's. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Pregnant women, children, and teens can also follow the tips for reducing exposure listed above.



Where can I get more information?

For more information about EMF exposures and cell phones, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 5



Cell Phones and Health

Cell phones, like other electronic devices, emit a kind of energy called radiofrequency EMFs (electromagnetic fields). Health officials are concerned about possible health effects from cell phone EMFs because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer and other health problems. For those concerned about possible health problems, this fact sheet provides information about how to lower exposure to EMFs from cell phones.

What do we know about cell phones and health?



Several studies have found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head that

people usually held their phones. Although the chance of developing brain cancer is very small, these studies suggest that regular cell

phone use increases the risk of developing some kinds of brain cancer. Some studies have also linked exposure to EMFs from cell phones to fertility problems. As more studies are done and we learn more about possible risks for cancer and other health problems linked to cell phone use, the recommendations on this fact sheet may change.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices. Some devices, such as watches, create weak EMFs that are considered harmless. Others, like X-ray machines, generate very strong EMFs that can damage cells and tissues, and cause cancer and other health effects. This is why we try to only use X-rays when necessary. Cell phones make relatively weak EMFs, somewhat less than those from microwave ovens, but because they are used frequently and kept close to the head and body, cell phone EMFs can affect nearby cells and tissues.

EMF exposure from cell phones

Your exposure to cell phone EMFs depends mostly on your distance from the phone, the strength of the EMF, and how long and how often you use the phone. The farther away the phone is from your body, the lower the exposure. Your cell phone produces stronger EMFs at the start of a call, when it is trying to connect to a cell tower, and also when only one or two bars are showing. Your phone also emits stronger EMFs when used in a moving car, bus, or train, as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

What can I do to reduce my exposures to EMFs from cell phones?

To lower your exposure to EMFs from cell phones:

Increase the distance between you and your phone by:

- **Using the speaker phone.**
- **Sending text messages.**
- **Use a headset and carry your phone away from your body.** EMFs from wireless (Bluetooth) and wired headsets are usually weaker than those from a cell phone.
- **Keep your phone away from your body.** A cell phone that is on can emit EMFs even when it is not being used. Do not sleep with your cell phone near you or carry it in a pocket or directly on your body unless the phone is turned off.

Limit your cell phone use when reception is weak or increase the distance between you and the phone. When your phone shows only one or two bars, it is emitting stronger EMFs than when three, four, or five bars are showing.

Reduce the amount of time spent talking on a cell phone.

- **Keep cell phone calls short**, even when using a wireless or wired headset.
- **Use speaker phone mode or a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off your headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures.

What about cell phone EMFs and children?

EMFs can pass deeper into a child's brain than an adult's. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Pregnant women, children, and teens can also follow the tips for reducing exposure listed above.



Where can I get more information?

For more information about EMF exposures and cell phones, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 6



Cell Phones: Health and Safety

Cell phones play an increasingly important role in everyday life. As with other technological advances, however, they can also have some negative impacts. Cell phones increase the risk of car and truck accidents when people talk on the phone or text while driving. In addition, like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices, including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak and some, like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using them over a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. Based on these studies, the World Health Organization recently designated EMFs from

cell phones as "possibly" able to cause cancer in humans. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

What can I do to reduce my exposures to EMFs from cell phones?

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from wireless and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Limit your cell phone use when reception is poor or increase the distance between your head and the phone. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are showing.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a wireless or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 7



Cell Phones: Health and Safety

Cell phones play an increasingly important role in everyday life. As with other technological advances, however, they can also have some negative impacts. Cell phones increase the risk of car and truck accidents when people talk on the phone or text while driving. In addition, like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices, including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak, and some, like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using them over a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. Based on these studies, the World Health Organization recently designated EMFs from cell phones as "possibly" able to cause cancer in humans. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

September 2011

What can I do to reduce my exposures to EMFs from cell phones?

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from wireless and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Limit your cell phone use when reception is poor or increase the distance between your head and the phone. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are showing.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a wireless or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Where can I get more information?

For more information about EMF exposures and cell phones, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 8



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because some recent studies suggest that long-term cell phone use may increase the risk of brain cancer.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices, including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak, and some, like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using cell phones for a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

Cell Phones and Safe Driving

According to the California Office of Traffic Safety, driver distraction is involved in 80% of vehicle crashes. A common form of driver distraction is talking on a cell phone or texting. To reduce the number of driving-related injuries and deaths due to driver distraction, California has passed strict cell phone laws.

- Adult drivers cannot text or talk on a cell phone without using a hands-free device, such as a headset or speakerphone.
- Teens under age 18 are not allowed to use cell phones at all while driving.

However, because recent studies suggest that hands-free devices do not necessarily reduce driver distraction, CDPH recommends that drivers of all ages not use cell phones while driving.

What can I do to reduce my exposures to EMFs from cell phones?

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from wireless and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Do not use your cell phone when reception is poor. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are shown.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a wireless or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Wireless and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Children and teens can also follow the tips for reducing exposure listed above.

Where can I get more information?

For more information about the information in this fact sheet, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 9



Cell Phones and Your Health

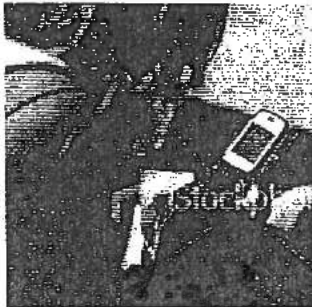
Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because recent studies suggest that long-term cell phone use may increase the risk of brain cancer and other health effects.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices, including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak, and some, like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using cell phones for a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

Cell Phones and Safe Driving

According to the California Office of Traffic Safety, driver distraction is involved in 80% of vehicle crashes. A common form of driver distraction is talking on a cell phone or texting. To reduce the number of driving-related injuries and deaths due to driver distraction, California has passed strict cell phone laws.

- Adult drivers cannot text or talk on a cell phone without using a hands-free device, such as a headset or speakerphone.
- Teens under age 18 are not allowed to use cell phones at all while driving.

However, because recent studies suggest that hands-free devices do not necessarily reduce driver distraction, CDPH recommends that drivers of all ages not use cell phones while driving.

What can I do to reduce my exposures to EMFs from cell phones?

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Do not use your cell phone when reception is poor. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are shown.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Children and teens can also follow the tips for reducing exposure listed above.

Where can I get more information?

For more information about the information in this fact sheet, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 10



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because recent studies suggest that long-term cell phone use may increase the risk of brain cancer and other health effects.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices, including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak, and some like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using cell phones for a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

Cell Phones and Safe Driving

The National Highway Traffic Safety Administration estimates that 25% of all car crashes are caused by distracted drivers. Studies show that talking on a cell phone or texting are serious and common distractions while driving. California has responded to this problem by passing strict laws to prevent driving-related injuries and deaths. For adult drivers, California has banned all texting and handheld cell phone use. Cell phones may only be used with hands-free devices such as headsets and speakerphones. Teens under age 18 are not allowed to use cell phones at all while driving.

What can I do to reduce my exposures to EMFs from cell phones?

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Do not use your cell phone when reception is poor. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are shown.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Children and teens can also follow the tips for reducing exposure listed above.

Where can I get more information?

For more information about the information in this fact sheet, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST.**

DOCUMENT 11



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Health officials are concerned about possible health effects from EMFs from cell phones because recent studies suggest that long-term cell phone use may increase the risk of brain cancer and other health effects.

This fact sheet provides recommendations for lowering exposure to EMFs for people who are concerned about possible health problems related to cell phone use.

What are EMFs?

EMFs are types of radiation created by all electronic devices, including digital watches, cordless phones, microwave ovens, and x-ray machines. Some EMFs, like those made by watches, are very weak, and some, like those from x-ray machines, are very strong. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know whether using cell phones for a long time can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phones. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use may increase the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use, so the recommendations on this fact sheet may change in the future.

Cell Phones and Safe Driving

The National Highway Traffic Safety Administration estimates that 25% of all car crashes are caused by distracted drivers. Studies show that talking on a cell phone or texting are serious and common distractions while driving. California has responded to this problem by passing strict laws to prevent driving-related injuries and deaths. For adult drivers, California has banned all texting and handheld cell phone use. Cell phones may only be used with hands-free devices such as headsets and speakerphones. Teens under age 18 are not allowed to use cell phones at all while driving.

What can I do to reduce my exposures to EMFs from cell phones?

Your exposure to EMFs from cell phones depends on many things, such as your distance from the phone and the strength of the EMF. The farther away the phone is from your body, the lower the exposure. Your cell phone produces a stronger EMF at the start of a call, when it is trying to connect to a cell tower, and also when phone reception is poor (when only one or two bars are showing). Your phone also emits a stronger EMF when used in a moving car, bus, or train as the phone switches connections from one cell tower to another. Finally, some phones produce stronger EMFs than others.

If you are concerned about EMFs from cell phones, you can do the following things to lower your exposures:

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Do not use your cell phone when reception is poor. When your phone shows only one or two bars, it is emitting a stronger EMF than when three or four bars are shown.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not rely on devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces a phone's signal may force the phone to emit a stronger EMF and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to texting, important calls, and emergencies. Children and teens can also follow the tips for reducing exposure listed above.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and handsets emit EMFs. However, possible health effects of cordless phone use have not been studied very much. If you are concerned about EMFs from cordless phones, you can do the following things to lower your exposures:

Increase the distance between your head and the phone.

- Use the **speaker phone mode** on the base station or handset.
- Use a **headset**.
- Do not sleep with the **base station near your head**.

Reduce the time spent on the cordless phone.

- Keep calls **short**.
- Use a **headset or switch to a corded phone** for long conversations.

Where can I get more information?

For more information about the information in this fact sheet, please send an email to: cellinfo@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 12



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

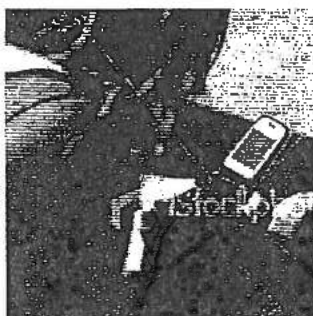
- Exposure to high levels of EMFs are known to damage cells in the body, which can lead to cancer.
- People use cell phones often and on a regular basis, so exposure to EMFs from cell phones can be frequent and can add up.
- Cell-phones are held to the ear, so the brain gets the largest exposures to EMFs.

This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones. Until more is known it is important to take precautions to reduce exposure to EMFs from cell phone use.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices, including watches, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs like those made by watches, and very strong EMFs like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health over a long time. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

Cell Phones and Safe Driving

The National Highway Traffic Safety Administration estimates that 25% of all crashes are caused by distraction. Studies show that cell phones are a serious and common distraction while driving. In fact, up to 6% of drivers are using their phones for talking or texting at any given time, placing themselves and others at risk. California has responded to this problem with strict laws to prevent highway injuries and deaths. For adult drivers, California has banned all texting and handheld use. Cell phones may only be used with hands-free devices like headsets and speakerphones. For drivers under age 18, there is a ban on any cell phone use, including hands-free devices and texting.

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Choose a phone with a low SAR (Specific Absorption Rate). There is a wide range of SARs among different cell phones. A low SAR means less EMF exposure. To find the SAR for a specific phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures: For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

- **How close you are to the phone** — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.
- **What your cell phone is doing** — When your cell phone is off, it emits almost no EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.
- **How good the reception is** — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs to connect to the cell tower. A cell phone will also emit strong EMFs when used in a moving car, bus, or train as it switches connections to different cell towers.
- **The strength of EMFs that your cell phone emits** — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone list SAR levels for many phones.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

Increase the distance between your head and the phone.

- **Use the speaker phone mode** on the base station or handset.
- **Use a headset.**
- **Do not sleep with the base station near your head.**

Reduce the time spent on the cordless phone.

- **Keep calls short.**
- **Use a headset or switch to a corded phone** for long conversations.
- **Replace old analog cordless phones with digital cordless phones or corded phones.** Corded phones produce very weak EMFs. Digital cordless phones emit weaker EMFs than analog cordless phones.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch, California Department of Public Health
(510) 620-3620

Or email cdphinetadm@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 13



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Exposure to high levels of EMFs are known to damage cells in the body, which can lead to cancer.
- People use cell phones often and on a regular basis, so exposure to EMFs from cell phones can be frequent and can add up.
- Cell-phones are held to the ear, so the brain gets the largest exposures to EMFs.

This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones. Until more is known it is important to take precautions to reduce exposure to EMFs from cell phone use.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices, including watches, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs, like those made by watches, and very strong EMFs, like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health over a long time. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone

use. As more is learned about cell phones and health, other recommendations may be made.

Cell Phones and Safe Driving

The National Highway Traffic Safety Administration estimates that 8 of every 10 crashes are caused by distraction. More and more often, that distraction is a cell phone. In fact, up to 10% of drivers are using a phone at any given moment during the day. California has responded to this problem with strict laws to control cell phone use among drivers and thus prevent highway injuries and deaths. For adult drivers, California has an outright ban on all texting or handheld use. For drivers under age 18, there is a ban on any phone use, so even "hands-free" devices are not allowed, and this definitely means no texting!

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Choose a phone with a low SAR (Specific Absorption Rate). There is a wide range of SARs among different cell phones. A low SAR means less EMF exposure. To find the SAR for a specific phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

- **How close you are to the phone** — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.
- **What your cell phone is doing** — When your cell phone is off, it emits almost no EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.
- **How good the reception is** — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs to connect to the cell tower. A cell phone will also emit strong EMFs when used in a moving car, bus, or train as it switches connections to different cell towers.
- **The strength of EMFs that your cell phone emits** — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

Increase the distance between your head and the phone.

- Use the **speaker phone mode** on the base station or handset.
- Use a **headset**.
- Do not sleep with the base station near your head.

Reduce the time spent on the cordless phone.

- Keep calls short.
- Use a headset or switch to a corded phone for long conversations.
- Replace old analog cordless phones with **digital cordless phones or corded phones**. Corded phones produce very weak EMFs. Digital cordless phones emit weaker EMFs than analog cordless phones.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch, California Department of Public Health
(510) 620-3620

Or email cdphinetadm@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 14



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

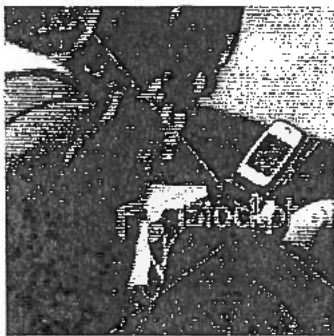
- Exposure to high levels of EMFs are known to damage cells in the body, which can lead to cancer.
- People use cell phones often and on a regular basis, so exposure to EMFs from cell phones can be frequent and can add up.
- Cell-phones are held to the ear, so the brain gets the largest exposures to EMFs.

This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones. Until more is known it is important to take precautions to reduce exposure to EMFs from cell phone use.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices including watches, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs, like those made by watches, and very strong EMFs, like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health over a long time. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

Cell Phones and Safe Driving

The National Highway Traffic Safety Administration estimates that 8 of every 10 crashes are caused by distraction. More and more often, that distraction is a cell phone. In fact, up to 10% of drivers are using a phone at any given moment during the day. California has responded to this problem with strict laws to control cell phone use among drivers and thus prevent highway injuries and deaths. For adult drivers, California has an outright ban on all texting or handheld use. For drivers under age 18, there is a ban on any phone use so even "hands-free" devices are not allowed, and this definitely means no texting!

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Choose a phone with a low SAR (Specific Absorption Rate). There is a wide range of SARs among different cell phones. A low SAR means less EMF exposure. To find the SAR for a specific phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

- **How close you are to the phone** — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.
- **What your cell phone is doing** — When your cell phone is off, it emits almost no EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.
- **How good the reception is** — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs to connect to the cell tower. A cell phone will also emit strong EMFs when used in a moving car, bus, or train as it switches connections to different cell towers.
- **The strength of EMFs that your cell phone emits** — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

Increase the distance between your head and the phone.

- **Use the speaker phone mode** on the base station or handset.
- **Use a headset.**
- **Do not sleep with the base station near your head.**

Reduce the time spent on the cordless phone.

- **Keep calls short.**
- **Use a headset or switch to a corded phone** for long conversations.
- **Replace old analog cordless phones with digital cordless phones or corded phones.** Corded phones produce very weak EMFs. Digital cordless phones emit weaker EMFs than analog cordless phones.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch, California Department of Public Health
(510) 620-3620

Or email cdphinetaadm@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 15



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

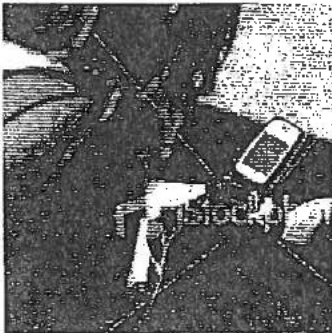
- Exposure to high levels of EMFs are known to damage cells in the body, which can lead to cancer.
- People use cell phones often and on a regular basis, so exposure to EMFs from cell phones can be frequent and can add up.
- Cell-phones are held to the ear, so the brain gets the largest exposures to EMFs.

This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones. Until more is known it is important to take precautions to reduce exposure to EMFs from cell phone use.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices, including watches, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs, like those made by watches, and very strong EMFs, like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health over a long time. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

Cell Phones and Safe Driving

If you use a cell phone while driving, you are more likely to have a car crash. To lower this risk, California law requires that drivers use a "hands-free" device, like a headset or speakerphone, and bans texting while driving. However, because even hands-free talking can distract you and slow your reaction time, it is better not to use a cell phone at all while you are driving.

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Choose a phone with a low SAR (Specific Absorption Rate). There is a wide range of SARs among different cell phones. A low SAR means less EMF exposure. To find the SAR for a specific phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

- **How close you are to the phone** — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.
- **What your cell phone is doing** — When your cell phone is off, it emits almost no EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.
- **How good the reception is** — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs to connect to the cell tower. A cell phone will also emit strong EMFs when used in a moving car, bus, or train as it switches connections to different cell towers.
- **The strength of EMFs that your cell phone emits** — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

Increase the distance between your head and the phone.

- Use the **speaker phone mode** on the base station or handset.
- Use a **headset**.
- Do not sleep with the **base station near your head**.

Reduce the time spent on the cordless phone.

- Keep calls **short**.
- Use a **headset or switch to a corded phone** for long conversations.
- Replace old **analog cordless phones with digital cordless phones or corded phones**. Corded phones produce very weak EMFs. Digital cordless phones emit weaker EMFs than analog cordless phones.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch, California Department of Public Health
(510) 620-3620

Or email cdphinetadm@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 16



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Exposure to high levels of EMFs are known to damage cells in the body, which can lead to cancer.
- People use cell phones often and on a regular basis, so exposure to EMFs from cell phones can be frequent and can add up.
- Cell-phones are held to the ear, so the brain gets the largest exposures to EMFs.

This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones.

Until more is known it is important to take precautions to reduce exposure to EMFs from cell phone use.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices including watches, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs like those made by watches, and very strong EMFs like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. EMFs from x-ray machines are much stronger than those from cell phones and other household devices.

What do we know about cell phones and health?



Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health over a long time. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

January 2010

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head** unless the phone is turned off.

Choose a phone with a low SAR (Specific Absorption Rate). There is a wide range of SARs among different cell phones. A low SAR means less EMF exposure. To find the SAR for a specific phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short,** even when using a Bluetooth or wired headset.
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

Are cell phones safe for children?



EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

- **How close you are to the phone** — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.
- **What your cell phone is doing** — When your cell phone is off, it emits almost no EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.
- **How good the reception is** — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs to connect to the cell tower. A cell phone will also emit strong EMFs when used in a moving car, bus, or train as it switches connections to different cell towers.
- **The strength of EMFs that your cell phone emits** — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

Increase the distance between your head and the phone.

- Use the **speaker phone mode** on the base station or handset.
- Use a **headset**.
- Do not sleep with the base station near your head.

Reduce the time spent on the cordless phone.

- Keep calls short.
- Use a headset or switch to a corded phone for long conversations.
- Replace old analog cordless phones with **digital cordless phones or corded phones**. Corded phones produce very weak EMFs. Digital cordless phones emit weaker EMFs than analog cordless phones.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch, California Department of Public Health
(510) 620-3620

Or email cdphinetadm@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 17

Cell Phones and Your Health

Cell phones, like all electronic devices, emit a kind of radiation called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Many people use cell phones every day, resulting in frequent EMF exposure.
- Some studies have found an increased risk of developing brain cancer for people who used their cell phones for 10 years or more.
- The brain gets the highest exposure to EMFs when the cell phone is held to the ear.

Until more is known about cell phones and health, you can take simple precautions to reduce exposure to EMFs from cell phones. This fact sheet provides recommendations for lowering your exposure.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices, including watches, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs, like those made by watches, and very strong EMFs, like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens. [EMFs from x-ray machines are much stronger than those from these other devices: make this the caption for the visual]

What do we know about cell phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health over a long time. Some recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones for 10 years or more. Most of the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain

cancers. More studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone. Instead of holding the phone to your ear:

- **Use the speaker phone mode.**
- **Use a headset.** EMFs from Bluetooth and wired headsets are usually weaker than those from a cell phone.
- **Send text messages.**
- **Do not sleep with your cell phone near your head unless the phone is turned off.**

Choose a phone with a low SAR (Specific Absorption Rate). There is a wide range of SARs among different cell phones. A low SAR means less EMF exposure. To find the SAR for a specific phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone.

- **Keep cell phone calls short, even when using a Bluetooth or wired headset.**
- **Use a corded phone for longer conversations.** Corded phones produce very weak EMFs.

Take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

What your cell phone is doing — When your cell phone is off, it emits almost no EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start

of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.

How good the reception is — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs to connect to the cell tower. A cell phone will also emit strong EMFs when used in a moving car, bus, or train as it switches connections to different cell towers.

The strength of EMFs that your cell phone emits — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

Are cell phones safe for children and teens?

EMFs can pass more easily into a child's brain than into an adult brain. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

- Increase the distance between your head and the phone
 - Use the speaker phone mode on the base station or handset.
 - Use a headset.
 - Do not sleep with the base station near your head.
- Reduce the time spent on the cordless phone
 - Keep calls short.
 - Use a headset or switch to a corded phone for long conversations.
- Replace old analog cordless phones with digital cordless phones or

corded phones. Corded phones produce very weak EMFs. Digital cordless phones emit weaker EMFs than analog cordless phones.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch

California Department of Public Health

(510) 620-3539

Or email DEODCGeneral@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 18

Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of radiation called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for 10 years or more had an increased risk of developing brain cancer.
- Many people use cell phones every day, resulting in frequent EMF exposure.
- When a cell phone is held to the ear, the brain gets the highest exposure to EMFs.

Until more is known about whether cell phones affect health, you can take simple precautions to reduce exposure to EMFs from cell phones. This fact sheet provides recommendations for lowering your exposure.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs, like those made by watches, and very strong EMFs, like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens, which are all much weaker than x-ray machines.

Comment [FN1]: Lauren, can the sentence be shortened?

What do we know about cell phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have regularly used cell phones over a long time. More often the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More

studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone

- Send text messages.
- Use the speaker phone mode.
- Use a headset but take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone, but they are often weaker than those from your phone.
- Do not sleep with your cell phone near your head unless the phone is turned off. Cell phones only produce EMFs when on.

Choose a phone with a low SAR (Specific Absorption Rate). A low SAR means less EMF exposure. There is a large range in SARs between different cell phones. To find the SAR for a phone, check websites like www.cnct.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone

- Keep cell phone calls short, even when using a Bluetooth or wired headset.
- Use a corded phone for longer conversations. Corded phones produce very weak EMFs.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

What your cell phone is doing — When your cell phone is off, it does not emit EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.

How good the reception is — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs. A cell phone will also emit strong EMFs when used in a moving car, bus or train as it switches connections to different cell towers.

The strength of EMFs that your cell phone emits — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

Are cell phones safe for children and teens?

EMFs can pass more easily into children's brains than into those of adults. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

- Increase the distance between your head and the phone
 - Use the speaker phone mode on the base station or handset.
 - Use a headset.
 - Do not sleep with the base station near your head.
- Reduce the time spent on the phone
 - Keep calls short.
 - Use a headset or switch to a corded phone for long conversations.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch

California Department of Public Health

(510) 620-3539

Or email DEODCGeneral@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 19

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 19

Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of radiation called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for 10 years or more had an increased risk of developing brain cancer.
- Many people use cell phones every day, resulting in frequent EMF exposure.
- When a cell phone is held to the ear, the brain gets the highest exposure to EMFs.

Until more is known about whether cell phones affect health, you can take simple precautions to reduce exposure to EMFs from cell phones. This fact sheet provides recommendations for lowering your exposure.

What are EMFs?

EMFs are types of radiation. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. There are very weak EMFs, like those made by watches, and very strong EMFs, like those from x-ray machines. The strength of EMFs from cell phones and cordless phones is between those from watches and those from microwave ovens, which are all much weaker than x-ray machines.

Comment [PR1]: Lauren, can the sentence be shortened?

What do we know about cell phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know how using cell phones can affect health. Some recent studies found that people with certain kinds of brain cancer were more likely to have regularly used cell phones over a long time. More often the cancers were on the same side of the head where people usually held their phone. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. More

studies are being done to look at risks of cancer and other health problems that may be linked to cell phone use. As more is learned about cell phones and health, other recommendations may be made.

How can I reduce my exposures to EMFs from cell phones?

Increase the distance between your head and your phone

- Send text messages.
- Use the speaker phone mode.
- Use a headset but take off the headset when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone, but they are often weaker than those from your phone.
- Do not sleep with your cell phone near your head unless the phone is turned off. Cell phones only produce EMFs when on.

Choose a phone with a low SAR (Specific Absorption Rate). A low SAR means less EMF exposure. There is a large range in SARs between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

If you cannot use a headset or speaker phone, wait a few seconds before placing the phone to your ear when making or answering a call. Cell phones produce strong EMFs while connecting at the start of a call.

Reduce the amount of time spent on a cell phone

- Keep cell phone calls short, even when using a Bluetooth or wired headset.
- Use a corded phone for longer conversations. Corded phones produce very weak EMFs.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on:

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

What your cell phone is doing — When your cell phone is off, it does not emit EMFs. When the phone is on but not in use, it emits weak EMFs. When the phone is connecting at the start of a call, it produces stronger EMFs. During a call, EMFs are weaker than when the phone first connects.

How good the reception is — When your phone reception is poor (when it shows only one or two bars), your phone produces stronger EMFs. A cell phone will also emit strong EMFs when used in a moving car, bus or train as it switches connections to different cell towers.

The strength of EMFs that your cell phone emits — EMF exposure is greater for some cell phones than others. SAR (Specific Absorption Rate) is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure. Websites like www.cnet.com and www.ewg.org/cellphone-radiation list SAR levels for many phones.

Are cell phones safe for children and teens?

EMFs can pass more easily into children's brains than into those of adults. Also, the brain is still developing through the teen years, which may make children and teens more sensitive to EMF exposures. For these reasons, parents may want to limit their child's cell phone use to important calls and emergencies. Children and teens should also follow the tips for reducing exposure.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

- Increase the distance between your head and the phone
 - Use the speaker phone mode on the base station or handset.
 - Use a headset.
 - Do not sleep with the base station near your head.
- Reduce the time spent on the phone
 - Keep calls short.
 - Use a headset or switch to a corded phone for long conversations.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch

California Department of Public Health

(510) 620-3539

Or email DEODCGeneral@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 20

Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of radiation called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for many years were more likely to develop cancer.
- More people are using cell phones on a daily basis, so the time they are exposed to EMFs from cell phones can add up quickly.
- When cell phones are held to the ear, the brain gets the highest exposure to EMFs.

Until more is known about whether cell phones affect health, you can take simple precautions to reduce exposure to EMFs from cell phones. This fact sheet provides recommendations for lowering your exposure.

What are EMFs?

EMFs are types of radiation with a wide range of strengths. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, and microwave ovens, which are all much weaker than x-ray machines. Very weak EMFs, like those made by watches, are of little concern. Very strong EMFs, like those from x-ray machines, can be harmful if the exposure is high or happens often. The strength of the EMFs that cell phones and cordless phones emit is between those from watches and those from microwave ovens.

What do we know about cell phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know for certain how using cell phones can affect your health. Some recent studies found that people with certain kinds of brain cancer were more likely to have regularly used cell phones for a long time. More often the cancers were on the same side of the head where people usually held their phone. Even though the

Comment[EM1]: See my comments on a separate section about this section. LW, I like both of your suggestions. Barbara: please remind me of Jan's suggestion if they are not reflected in this version. Thanks. RK

chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain cancers. The studies don't tell us what amount of cell phone use increases your risk of cancer. Studies are being done to look at this question, and the risk for other health problems as well. As more is learned about cell phones and health, other recommendations may be made.

How can I reduce my exposures to EMFs from cell phones?

Send text messages or use a speaker phone to increase the distance between your head and your phone.

Use a headset. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than those from your phone.

Choose a phone with a low SAR (Specific Absorption Rate). A low SAR means less EMF exposure. There is a large range in SARs between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

Limit the amount of time you spend on a cell phone, even when using a Bluetooth or wired headset. Use a corded phone for longer conversations. Corded phones produce weak EMFs.

Remove the headset from your ear when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

When not using a headset, wait a few seconds before placing the phone to your ear, when placing or answering a call. Cell phones produce the strongest EMFs for several seconds while connecting at the start of a call.

Do not sleep with your phone near your head, unless the phone is turned off. Cell phones only produce EMFs while turned on to place and receive calls.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on many factors:

What your cell phone is doing — Cell phones emit different levels of EMFs. When the cell phone is off, it does not emit EMFs. When the phone is on but not in use, it emits a weak EMF in order to be ready to receive phone calls. At the start of a call, when it first connects, it produces the strongest EMFs. During a call, EMFs are somewhere between these two levels. When your phone reception is poor, your phone produces stronger EMFs. It also emits stronger EMFs when switching between cell towers, which happens when riding in a car.

The strength of EMFs that your cell phone emits — EMF exposure is greater for some cell phones than others. Websites, like www.onet.com and www.ewg.org/cellphone-radiation, list the SAR (Specific Absorption Rate) levels for many phones. SAR is a measure of exposure from a phone's EMFs. A low SAR means less EMF exposure.

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the higher your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

Are cell phones safe for children?

Researchers are still learning about whether long-term cell phone use in children and teens affects their health. We do know that children's brains and nerves are still developing, and may be more sensitive to EMF exposures. We also know that exposure is greater for children and teens because EMFs can pass more easily into their brains. For this reason, parents may want to limit their child's use of a cell phone to necessary conversations and emergencies. Children should also follow the cell phone use recommendations provided.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. To lower your exposure from cordless phones:

- Limit the amount of time you spend with the cordless phone handset to your ear.
- Use the base station or cordless handset in speaker mode at arms length
- Use a headset for private conversations or switch to a corded phone.
- Sleep with the base station at least an arm's length away from your body.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Environmental Health Investigations Branch

California Department of Public Health

(510) 620-3539

Or email DEODCGeneral@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 21

Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy [are we switching to "radiation" here for consistency?] called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for many years were more likely to develop cancer.
- More people are using cell phones on a daily basis, so exposure time to EMFs from cell phones can add up quickly.
- When cell phones are held to the ear, the brain gets the highest exposure to EMFs.

Until more is known about whether cell phones affect health, you can take simple precautions to reduce exposure to EMFs from cell phones. This fact sheet provides recommendations for lowering your exposure.

What are EMFs?

EMFs are types of radiation with a wide range of strengths. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. Weak EMFs, like those made by watches, are of little concern. Strong EMFs, like those from x-ray machines, can be harmful if the exposure is high or happens often. The strength of the EMFs that cell phones and cordless phones emit is between those from watches and those from microwave ovens. What do we know about cell phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know for certain how using cell phones can affect your health. Some recent studies found that people with certain kinds of brain cancer were more likely to have regularly used cell phones a long time. These cancers were more often on the same side of the head that the phone was usually held. Even though the chance of developing brain cancer is very small, these studies suggest that regular cell phone use increases the risk of developing these kinds of brain

cancers. The studies don't tell us what amount of cell phone use increases your risk of cancer. Studies are being done to look at this question, and the risk for other health problems as well. As more is learned about cell phone and health, more recommendations may be made.

How can I reduce my exposures to EMFs from cell phones?

Send text messages or use a speaker phone to increase the distance between your head and your phone.

Use a headset. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than those from your phone.

Choose a phone with a low SAR (Specific Absorption Rate). A low SAR means less EMF exposure. There is a large range in SARs between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

Limit the amount of time you spend on a cell phone, even when using a Bluetooth or wired headset. Use a corded phone for longer conversations. Corded phones produce weak EMFs.

Remove the headset from your ear when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

If not using a headset, wait for the telephone call to connect before placing the phone to your ear. Cell phones produce the strongest EMFs when they are trying to connect. Wait until the other person is on the line before putting the phone to your ear.

Do not sleep with your phone near your head, unless the phone is turned off. Cell phones only produce EMFs while on.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. A product that reduces the phone's signal may force the phone to emit more EMFs and increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phones depends on many factors:

What your cell phone is doing — Cell phones emit different levels of EMFs. When the cell phone is off, it does not emit EMFs. When the phone is on but not in use, it emits a weak EMF in order to be ready to receive phone calls. At the start of a call, when it first connects, it produces the strongest EMFs. During a call, EMFs are somewhere between these two levels. When your phone reception is poor, your phone produces stronger EMFs. It also emits stronger EMFs when switching between cell towers, such as when traveling at high speeds.

The strengths of EMFs that your cell phone emits — Some cell phones emit stronger EMFs than others. Some websites, like www.cnet.com and www.ewg.org/cellphone-radiation, list the

SAR (Specific Absorption Rate) levels for many phones. SAR is a measure of the strength of a phone's EMFs. Phones with higher SAR levels emit stronger EMFs, and may be more harmful than phones with lower SAR levels.

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the larger your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

Are cell phones safe for children?

Researchers are still learning about whether long-term cell phone use in children and teens affects their health. We do know that children's brains and nerves are still developing, and may be more sensitive to EMF exposures. We also know that exposure is greater for children and teens because EMFs can pass more easily into their brains. For this reason, parents may want to limit childrens' use of cell phones to necessary conversations and emergencies and have them follow the recommendations. Sending text messages exposes the brain to less EMFs than talking on a cell phone because the phone is farther away. What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. They emit stronger EMFs when they are farther apart or when the signal is blocked by walls or floors. To lower your exposure from cordless phones:

- Limit the amount of time you spend on the phone.
- Use the speakerphone or a headset.
- Stay near the base station when using the handset.
- Sleep with the base station at least an arm's length away from your body.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Ian Walker
Environmental Health Investigations Branch
California Department of Health Services
(510) 620-3539
Or email DEODCGeneral@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 22

Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy ~~[are we switching to "radiation" here for consistency?]~~ called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for many years were more likely to have developed ~~certain types of~~ brain cancer.
- People ~~More people~~ are using cell phones ~~more often and on a regular daily basis,~~ so exposure ~~time~~ to EMFs from cell phones ~~can be frequent and can add up quickly.~~
- When cell phones are held to the ear, the brain gets the ~~largest~~ highest exposure to EMFs.

Formatted: Bullets and Numbering

Until more is known about cell phones and whether they ~~cell phones~~ affect health, you ~~may want to~~ can take simple precautions to reduce exposure to EMFs from cell phone use. This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones.

What are EMFs?

EMFs are types of radiation with a wide range of strengths. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. Weak EMFs, like those made by watches, are ~~harmless of little concern~~. Strong EMFs, like those ~~made by~~ from x-ray machines, can be harmful if the exposure is ~~too high or happens too many times~~ often. The strength of the EMFs that cell phones and cordless phones emit is between those from watches and those from microwave ovens.

What do we know about cell phones phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know for ~~certain~~ certain how using cell phones can affect your health. Researchers at the California Department of Public Health ~~looked at several studies about cell phone use and brain cancer. Recent~~ Some recent studies found that people with certain kinds of brain cancer were more likely to have regularly used cell phones a long time. These cancers were more often on the same side of the head as ~~people that the phone was usually held in their cell phone.~~ Even though the chance of developing brain cancer is very small, these studies suggest that high-regular cell phone use increases the risk of developing these kinds of brain cancers. The studies don't tell us what amount of cell phone use increases your risk of cancer. Studies are being done to look at this question, and the risk for other health problems as well. As more is learned about cell phone and health, more recommendations may be made.

How can I reduce my exposures to EMFs from cell phones?

Send text messages or use a speaker phone to increase the distance between your head and your phone.

Use a headset. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than those from your phone.

Choose a phone with a low SAR (Specific Absorption Rate). A low SAR means less EMF exposure. There is a large range in SARs between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

Limit the amount of time you spend on the cell phone, even when using a Bluetooth or wired headset. Use a corded phone for longer conversations. Corded phones do not produce weak EMFs.

Remove the headset from your ear when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Choose a phone with a low SAR (Specific Absorption Rate). SAR is a measure of the strength of a phone's EMFs. There is a large range in SAR levels between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

Wait. If not using a headset, wait for the telephone call to connect before placing the phone to your ear. Cell phones produce the strongest EMFs when they are trying to connect. Wait until the other person is on the line before putting the phone to your ear.

Use a headset. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than your phone. Using a headset, especially if your phone has a high SAR rating, will lower your exposures.

Send text messages or use a speaker phone to increase the distance between your head and your phone.

Do not sleep with your phone near your head, unless the phone is turned off. Cell phones only produce EMFs even when they are not in use while on.

Remove headset from your ear when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. Products A product that reduces the phone's signal will also may force the phone to work harder, emit more EMFs and can increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phone use changes over time depending on many factors:

Formatted

What your cell phone is doing — Cell phones emit different levels of EMFs, at different times. ~~The harder the phone works, the more energy it uses and the stronger the EMFs. When the cell phone is off, it does not emit EMFs. When the phone is on but not in use, it emits a weak EMF in order to be ready to receive phone calls. At the start of a call, when it first connects, it is working the hardest, and produces the strongest EMFs. During a call, EMFs strength is are somewhere in-between these two levels. When your phone reception is poor, your phone is working harder to connect and it produces stronger EMFs. It also emits stronger EMFs when switching between cell towers, such as when travelling/traveling in a vehicle, because the phone is working harder to find new cell towers as you change location at high speeds.~~

The range-strengths of EMFs that your cell phone emits — Some cell phones emit stronger EMFs than others. Some websites, like www.cnet.com and www.cwg.org/cellphone-radiation, list the SAR (Specific Absorption Rate) levels for many phones. SAR is a measure of the strength of a phone's EMFs. Phones with higher SAR levels emit stronger EMFs, and may be more harmful than phones with lower SAR levels.

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the larger your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

Are cell phones safe for children?

Researchers are still learning about whether long-term cell phone use in children and teens affects their health. We do know that children's brains and nerves are still developing, and may be more sensitive to EMF exposures. We also know that exposure is ~~larger-greater~~ for children and teens because EMFs can pass more easily into their brains. For this reason, parents may want to limit children's use of cell phones to necessary conversations and emergencies and have them follow the recommendations. Sending text messages exposes the brain to less EMFs than talking on a cell phone because the phone is farther away.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. They emit stronger EMFs when they are farther apart or when the signal is blocked by walls or floors. You can't lower your exposure from cordless phones by:

- Limiting the amount of time you spend on the phone.
- Use the speakerphone or and using a headset.
- Stay near the base station when using the handset.
- Sleep with the base station at least an arm's length away from your body.

Formatted: Bullets and Numbering

Where can I get more information?

For more information about the information in this fact sheet, contact:

Ian Walker
Environmental Health Investigations Branch
California Department of Health Services
(510) 620-3539

Or email DEODCGeneral@cdph.ca.gov

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 23

Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy ~~[are we switching to "radiation" here for consistency?]~~ called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for many years were more likely to ~~have developed certain types of brain cancer.~~
- ~~People.~~ More people are using cell phones more often and on a regular daily basis, so exposure ~~time~~ to EMFs from cell phones can be frequent and can add up quickly.
- When cell phones are held to the ear, the brain gets the largest ~~highest~~ exposure to EMFs.

Until more is known about ~~cell phones and whether they~~ cell phones affect health, you may want to ~~can~~ take simple precautions to reduce exposure to EMFs from cell ~~phone use~~ phones. This fact sheet provides recommendations for lowering your exposure ~~to EMFs from cell phones.~~

Formatted: Bullets and Numbering

Comment [LW1]: I don't know what an "exposure time" is. Maybe clearer to say, "More people are using cell phones on a daily basis so the amount of time they are exposed to EMFs from cell phones can add up quickly."

What are EMFs?

EMFs are types of radiation with a wide range of strengths. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. ~~Weak EMFs, like those made by watches, are harmless of little concern.~~ Strong EMFs, like those ~~made by~~ from x-ray machines, can be harmful if the exposure is ~~too high or happens too many times often.~~ The strength of the EMFs that cell phones and cordless phones emit is between those from watches and those from microwave ovens.

Comment [LW2]: Ian had suggested something along the lines of this rewrite for the above section to help clear up the issue we have about the less than helpful intro statement:

What is an Electromagnetic Field (EMF)? An EMF is a kind of radiation. EMFs are made (produced/emitted) by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. EMFs can vary widely in strength. Weak EMFs, like...

Comment [LW3]: "are thought to cause little or no harm." I'm concerned that it sounds like we don't care about weak EMFs rather than being a result of what we know/assume about them.

What do we know about cell phones-phone EMFs and health?

Because cell phones are a relatively new product, we do not yet know for ~~certain certain~~ how using cell phones can affect your health. ~~Researchers at the California Department of Public Health looked at several studies about cell phone use and brain cancer. Recent.~~ Some recent studies found that people with certain kinds of brain cancer were more likely to have regularly used cell phones a long time. ~~These cancers were more often on the same side of the head as people that the phone was usually held their cell phone.~~ Even though the chance of developing brain cancer is very small, these studies suggest that high-regular cell phone use increases the risk of developing these kinds of brain cancers. The studies don't tell us what amount of cell phone use increases your risk of cancer. Studies are being done to look at this question, and the risk for other health problems as well. ~~As more is learned about cell phone and health, more recommendations may be made.~~

Comment [LW4]: "over a long time." Or, can we quantify this? Over 20 years?

Comment [LW5]: "These cancers were more often on the side of the head that the phone was usually held." Or "In most cases, the cancers were on the same side of the head that the cell phone was usually held to." Or, "In most cases, the cancers were on the same side of the head that people held their phone to."

Comment [LW6]: "other"

How can I reduce my exposures to EMFs from cell phones?

Send text messages or use a speaker phone to increase the distance between your head and your phone.

Use a headset. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than those from your phone.

Choose a phone with a low SAR (Specific Absorption Rate). A low SAR means less EMF exposure. There is a large range in SARs between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

Limit the amount of time you spend on the a cell phone, even when using a Bluetooth or wired headset. Use a corded phone for longer conversations. Corded phones do not produce weak EMFs.

Remove the headset from your ear when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Choose a phone with a low SAR (Specific Absorption Rate). SAR is a measure of the strength of a phone's EMFs. There is a large range in SAR levels between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.

Wait if not using a headset, wait for the telephone call to connect before placing the phone to your ear. Cell phones produce the strongest EMFs when they are trying to connect. Wait until the other person is on the line before putting the phone to your ear.

Use a headset. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than your phone. Using a headset, especially if your phone has a high SAR rating, will lower your exposures.

Send text messages or use a speaker phone to increase the distance between your head and your phone.

Do not sleep with your phone near your head, unless the phone is turned off. Cell phones only produce EMFs even when they are not in use while on.

Remove headset from your ear when you're not on a call. Bluetooth and wired headsets emit EMFs even when you are not using your phone.

Do not use devices that claim to shield or neutralize EMFs from cell phones. These devices have not been shown to reduce exposures. Products A product that reduce-reduces the phone's signal will also may force the phone to work harder emit more EMFs and can increase exposures.

Comment [LW7]: "When not using a headset, wait for the call to connect before placing the phone to your ear. Cell phones produce the strongest EMFs when they are connecting." [Remove redundant last sentence.] Could also say, "When not using a headset, wait several seconds for the phone to connect..."

Formatted

EMF exposure from cell phones

Your exposure to EMFs from cell phone use changes over time depending depends on many factors:

What your cell phone is doing — Cell phones emit different levels of EMFs, at different times. ~~The harder the phone works, the more energy it uses and the stronger the EMFs. When the cell phone is off, it does not emit EMFs.~~ When the phone is on but not in use, it emits a weak EMF in order to be ready to receive phone calls. At the start of a call, when it first connects, it is ~~working the hardest, and produces the strongest EMFs. During a call, EMFs strength is~~ somewhere in-between these two levels. When your phone reception is poor, your phone is ~~working harder to connect and it produces stronger EMFs. It also emits stronger EMFs when switching between cell towers, such as when travelling/traveling in a vehicle, because the phone is working harder to find new cell towers as you change location at high speeds.~~

Comment [LW8]: What constitutes high speed? Maybe better to say, "...such as when riding in a car." This at least sets a reasonable minimum for concern.

The range/strengths of EMFs that your cell phone emits — Some cell phones emit stronger EMFs than others. Some websites, like www.cnet.com and www.ewg.org/cellphone-radiation, list the SAR (Specific Absorption Rate) levels for many phones. SAR is a measure of the strength of a phone's EMFs. Phones with higher SAR levels emit stronger EMFs, and may be more harmful than phones with lower SAR levels.

Comment [LW9]: We missed this one. Make it parallel to the SAR bullet sentence, or just delete it? Check the following sentence as well.

How close you are to the phone — EMFs are strongest right next to the phone. The closer you are to the phone, the larger your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

Are cell phones safe for children?

Researchers are still learning about whether long-term cell phone use in children and teens affects their health. We do know that children's brains and nerves are still developing, and may be more sensitive to EMF exposures. We also know that exposure is ~~larger/greater~~ for children and teens because EMFs can pass more easily into their brains. For this reason, parents may want to limit children's use of cell phones to necessary conversations and emergencies and have them follow the recommendations. Sending text messages exposes the brain to less EMFs than talking on a cell phone because the phone is farther away.

Comment [LW10]: "...their child's..."

Comment [LW11]: Should be the awkward, but technically correct "him or her." Could avoid this by deleting the "have them."

Comment [LW12]: Although I took this from prior versions, I make some assumptions, so please correct where needed.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. Both base stations and the handsets emit EMFs. They emit stronger EMFs when they are farther apart or when the signal is blocked by walls or floors. ~~You can~~ To lower your exposure from cordless phones by:

- Limiting the amount of time you spend on the phone.
- Use the speakerphone or-and-using a headset.
- Stay near the base station when using the handset.
- Sleep with the base station at least an arm's length away from your body.

Formatted: Bullets and Numbering

Where can I get more information?

For more information about the information in this fact sheet, contact:

Ian Walker
Environmental Health Investigations Branch
California Department of Health Services
(510) 620-3539

Or email DEODCGeneral@cdph.ca.gov

Comment [LW13]: This is the general "contact us" address from the division website. Is that what you were thinking? I sent a "test" email to see who gets it. I'm assuming it goes to Yvette.

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 24



Cell Phones and Your Health

Cell phones have become an important part of everyday life. Like other electronic devices, cell phones emit a kind of energy called EMFs (electromagnetic fields). Researchers are concerned about possible health effects from EMFs from cell phones because:

- Some studies have found that people who used their cell phones for many years were more likely to have developed certain types of brain cancer.
- People are using cell phones more often and on a regular basis, so exposure to EMFs from cell phones can be frequent and can add up.
- When cell phones are held to the ear, the brain gets the largest exposure to EMFs.

Until more is known about cell phones and whether they affect health, you may want to take precautions to reduce exposure to EMFs from cell phone use. This fact sheet provides recommendations for lowering your exposure to EMFs from cell phones.

What are EMFs?

EMFs are types of radiation with a wide range of strengths. They are created by all electronic devices, including watches, the wiring inside buildings, power lines, cordless phones, microwave ovens, and x-ray machines. Weak EMFs, like those made by watches, are harmless. Strong EMFs, like those made by x-ray machines, can be harmful if the exposure is too high or happens too many times. The strength of the EMFs that cell phones and cordless phones emit is between those from watches and those from microwave ovens.

What do we know about cell phones and health?

Because cell phones are a relatively new product, we do not yet know for certain how using cell phones can affect your health. Researchers at the California Department of Public Health looked at several studies about cell phone use and brain cancer. Recent studies found that people with certain kinds of brain cancer were more likely to have used cell phones a long time. These cancers were more often on the same side of the head as people held their cell phone. Even though the chance of developing brain cancer is very small, these studies suggest that high cell phone use increases the risk of developing these kinds of cancers. The studies don't tell us what amount of cell phone use increases your risk. Studies are being done to look at this question, and the risk for other health problems as well.

How can I reduce my exposures to EMFs from cell phones?

- **Limit the amount of time you spend on the cell phone**, even when using a Bluetooth or wired headset. Use a corded phone for longer conversations. Corded phones do not produce EMFs.
- **Choose a phone with a low SAR (Specific Absorption Rate)**. SAR is a measure of the strength of a phone's EMFs. There is a large range in SAR levels between different cell phones. To find the SAR for a phone, check websites like www.cnet.com or www.ewg.org/cellphone-radiation, or call the manufacturer.
- **Wait for the telephone call to connect before placing the phone to your ear**. Cell phones produce the strongest EMFs when they are trying to connect. Wait until the other person is on the line before putting the phone to your ear.
- **Use a headset**. Both Bluetooth and wired headsets produce EMFs, but they are often weaker than your phone. Using a headset, especially if your phone has a high SAR rating, will lower your exposures.
- **Send text messages or use a speaker phone** to increase the distance between your head and your phone.
- **Do not sleep with your phone near your head**. Cell phones produce EMFs even when they are not in use.
- **Remove headset from your ear when you're not on a call**. Bluetooth and wired headsets emit EMFs even when you are not using your phone.
- **Do not use devices that claim to shield or neutralize EMFs from cell phones**. These devices have not been shown to reduce exposures. Products that reduce the phone's signal will also force the phone to work harder and can increase exposures.

EMF exposure from cell phones

Your exposure to EMFs from cell phone use changes over time depending on many factors:

- **What your cell phone is doing** — Cell phones emit different levels of EMFs at different times. The harder the phone works, the more energy it uses and the stronger the EMFs. When the phone is not in use, it emits a weak EMF in order to be ready to receive phone calls. At the start of a call, when it first connects, it is working the hardest and produces the strongest EMFs. During a call, EMF strength is somewhere in between these two levels. When your phone reception is poor, your phone is working harder to connect and it produces stronger EMFs. It also emits stronger EMFs when travelling in a vehicle, because the phone is working harder to find new cell towers as you change location.
- **The range of EMFs that your cell phone emits** — Some cell phones emit stronger EMFs than others. Some websites, like www.cnet.com and www.ewg.org/cellphone-radiation, list the SAR (Specific Absorption Rate) levels for many phones. SAR is a measure of the strength of a phone's EMFs. Phones with higher SAR levels emit stronger EMFs, and may be more harmful than phones with lower SAR levels.
- **How close you are to the phone** — EMFs are strongest right next to the phone. The closer you are to the phone, the larger your exposure to EMFs. When the phone is about an arm's length away, the exposure is much lower.

Are cell phones safe for children?

Researchers are still learning about whether long-term cell phone use in children and teens affects their health. We do know that children's brains and nerves are still developing, and may be more sensitive to EMF exposures. We also know that exposure is larger for children and teens because EMFs can pass more easily into their brains. For this reason, parents may want to limit children's use of cell phones to necessary conversations and emergencies. Sending text messages exposes the brain to less EMFs than talking on a cell phone because the phone is farther away.

What about cordless phones?

Cordless telephones emit EMFs at levels similar to cell phones. You can lower your exposure from cordless phones by limiting the amount of time you spend on the phone and using a headset.

Where can I get more information?

For more information about the information in this fact sheet, contact:

Ian Walker

Environmental Health Investigations Branch

California Department of Health Services

(510) 620-3539

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 25

GUIDANCE

Measures to Reduce the Possible Health Risk of Electromagnetic Fields from Cell Phones and Cordless Phones

I. Introduction

This guidance document represents DEODC's present consensus on measures to reduce exposure and thereby reduce the possible health risks of electromagnetic fields from cell phones and cordless phones. It does not create or confer any rights for or on any person and does not operate to bind CDPH or the public.

The evidence that electromagnetic radiation from cell phones and cordless phones causes serious health effects in people is not conclusive. Therefore, considerable uncertainty remains about the impact of measures to reduce exposures, precluding the issuance of definitive guidance. However, given the seriousness of the potential health impacts and the ubiquity of exposure, it is prudent for DEODC to develop advice describing simple, but important, measures to reduce potential exposures.

II. Definitions

The following terms are defined for the purposes of this document.

- Electromagnetic Fields (EMFs) are forms of radiation created whenever electricity is generated or used. EMFs are produced by power lines, electric wiring, and electric equipment and appliances.
- Specific Absorption Rate (SAR) is a measurement of the rate at which energy is absorbed by the body, units are Watts per kilogram.

III. Background

Several recent news reports on cell phone use and brain cancer have focused public attention on health effects of cell phones and cordless phones (Ref 1,2,3). A committee was assembled in the Division of Environmental and Occupational Disease Control at the California Department of Public Health to assess cell phone and cordless phone risks and to develop recommendations for DGS and other large purchasers, as well as for employees and the general public to consider when purchasing or using these devices.

Cell phones and other wireless devices emit electromagnetic fields that can penetrate the skin and brain (Ref 4). While there is no conclusive data on the human health risk of electromagnetic fields generated by cell phones and cordless phones (Ref 5), a review of the literature yields several studies linking health risks, particularly malignant brain cancer, with cell phone and/or cordless phone use. The risks reported by these studies have been inconsistent (Ref 5). The studies do not indicate that cell phones are safe, nor do they show definitively that they are dangerous. However, growing evidence indicates that people should reduce exposures while research continues on this important question. Several recently published pooled analyses of multiple studies suggest that long-term (10 years or more) use of these devices is associated with increasing risks of malignant brain cancer (Ref 6,7), especially after taking into consideration the same-sided use of the phone and location of the tumor (Ref 7,8). These epidemiologic studies suggest statistically significant relative risks of 1.25 to 2.0 for malignant brain cancer in individuals with ten or more years of cell phone use (Ref 6,7,8). An

DRAFT

DRAFT

increased risk among long-term use is also associated with acoustic neuroma, a benign tumor of the auditory nerve that is response for one's hearing (Ref 7,9), especially after taking into consideration the same-sided use of the phone and location of the tumor (Ref 7).

Cellular telephone use is increasing rapidly in children and adolescents, and they are likely to accumulate many years of exposure during their lives. A recent analysis found increased risks of malignant brain cancer among cell phone and cordless phone users who were younger than 20 years old when they first used a cell phone (Ref 10). This observation is consistent with modeling studies suggesting that there may be additional differences in susceptibility to EMFs emitted by phones between young children and adults (Ref 4) and that children may be at greater risk because their nervous systems are still developing at the time of exposure (Ref 5).

The lifetime risk of acquiring malignant brain cancer and the rate of brain cancer in the population is low (Ref 11); however, cell phone and cordless phone EMF exposure is widespread. A small increase in risk of cancer from EMF exposure would represent a significant cost to society.

The actual exposure of the phone user to EMFs depends on a number of factors, such as phone characteristics. The Federal Communications Commission (FCC) provides consumers with information about human exposure to EMFs from cellular telephones and other devices at <http://www.fcc.gov/oet/rfsafety>. The web page includes information about the specific absorption rate (SAR) of cellular telephones produced and marketed. The SAR corresponds to the relative amount of EMF energy absorbed by the head of a cellular telephone user (Ref 5). Consumers can access this information using the phone's FCC ID number, which is usually located on the case of the phone. Using and/or buying devices with lower SAR ratings would reduce exposure to EMFs and employers can provide employees with the SAR ratings of phones available through work contracts.

Other factors that affect the actual exposure of the phone user include the distance to the phone, duration of the calls, and power level of the phone. Proximity to the cell phone increases exposure. EMF absorption is at the maximum on the side of the head to which the phone is held, closer to the antenna, and decreases to less than one-tenth on the opposite side of the head (Ref 12). Behaviors that can increase distance from the antenna include using speakerphone or a headset when on a call, text messaging or emailing instead of calling, and placing the phone away from the body when not on the phone.

The length of time spent on the phone increases exposure. Habits that can be adopted include: using the phone only for short conversations; checking voicemail and then returning the call on a non- or lower-EMF emitting device (ex: corded land lines or using a headset); or turning the phone off when not using it.

The power output of a phone is proportional to the EMF the phone emits. Factors that increase the power output include longer distance from the base station (e.g., areas of weak signal) and when the user is moving (e.g., in a car) (Ref 13). Power output and EMF levels also increase when the phone connects to the cell tower while dialing and answering calls. Behaviors can be adopted to reduce exposure, such as not using the phone when in roaming or low service areas, or when traveling at high speeds. Again, keeping the cell phone off or in "flight" mode reduces the power output of the phone.

IV. Recommendations

A. Recommendations for Department of General Services and other large purchasers

1. The Department of General Services should create contract language to require manufacturers to provide SAR ratings for all available phones, including Blackberries and other PDA-phone devices, and to offer low-emission ear pieces or headsets, as well as other appropriate field-reducing devices for newly purchased cell phones and cordless phones.
2. The Department of General Services should distribute to employees purchasing phones: the SAR ratings for all available phones; the available low-emission ear pieces and headsets for newly purchased phones; and a copy of the recommendations below on reducing potential cordless and cell phone risks.

B. Recommendations for Employees and General Public

• Special Considerations

Electromagnetic fields penetrate deeper into tissues of children and young adults (Ref 4). Exposure can be minimized by reducing use and adopting the habits listed below

1. When on a call, to reduce electromagnetic field exposure:

- a. Keep the cell phone at least an arm's length distance away from the body; distance reduces electromagnetic field exposure to the body (Ref 12).

Keep the cordless phone and cordless phone base station at an arm's length distance away from the body. These devices use electromagnetic emitting technology similar to that of a cell phone and are constantly emitting fields during phone calls (Ref 13).

- Hold the cell phone or cordless phone at least an arm's length away when turning on the phone and when waiting for the person you called to pick up.
- Use speaker phone mode and speak at a distance of at least an arm's length.
- Use an ear piece attachment or a wireless headset device (ex: Bluetooth).
- Communicate via text messaging or email rather than making a call.

b. Limit length of time the body is exposed.

- Use the cell phone or cordless phone only for short conversations.
- For longer conversations: use a land line with a corded phone; use an ear piece attachment or a wireless headset device; switch sides regularly while communicating.

- c. Avoid using your cell phone when it is in roaming, there are no or few bars of signal, or when moving at high speed, such as in a car or train; in these situations, the phone automatically increases power to a maximum as it repeatedly attempts to connect to a new relay antenna (Ref 13). Pull over to a safe place to make calls or wait till you reach your destination.

2. When not on a call, reduce electromagnetic field exposure.

- a. Even when not on a call, keep the cell phone, cordless phone, and electromagnetic field emitting accessories (ex: wireless headset devices) at least an arm's length distance away from the body. These devices are constantly emitting electromagnetic fields (Ref 14). These fields are lower than those emitted during a call, but potential risks can be reduced by increasing the distance between the device and the body.

DRAFT

DRAFT

- Keep the cell phone and cordless phone at least an arm's length distance away from the body (ex: at night do not place the phone under or next to your pillow).
 - Remove wireless headset devices (ex: Bluetooth) when not on a call.
- b. Potential risks can be reduced by limiting length of time the body is exposed.
- Keep cell phone off or in "flight" or "off-line" mode whenever possible.
 - Turn the phone off in "No Service" areas, where cell phone output will be at a maximum.
3. When buying a phone, consider low electromagnetic field emitting devices.
- a. Choose a device with the lowest SAR (Specific Absorption Rate) possible.
 - b. Replace old analog cordless phones with digital cordless phones or corded phones. Corded phones do not generate electromagnetic fields and digital cordless phones emit lower fields than analog cordless phones (Ref 13).
 - c. Pagers or beepers are receivers only and thus do not generate electromagnetic fields. To reduce electromagnetic field exposure, these may be used instead of the cell phone by people who are on constant "call".

Adopting these habits and following these no and low cost measures will substantially reduce exposure to electromagnetic radiation from cell phones and cordless phones, in turn potentially lowering risks of brain tumors, acoustic neuromas, and other serious illness.

V. References

1. Noveck, J. (2008, July 27). Cell phone cancer warning adds to parental worries. *USA Today*. Retrieved May 28, 2009 from: http://www.usatoday.com/tech/products/2008-07-27-1068169050_x.htm
2. Aubrey, A. (2008, September 25). Doctors Urge Research on Cell Phone-Cancer Issue. *NPR: All Things Considered*. Retrieved May 28, 2009 from: <http://www.npr.org/templates/story/story.php?storyId=95054397>
3. Bohan S. (2008, July 30). Cell phones still a health concern. *The Oakland Tribune*. Retrieved May 28, 2009 from: <http://www.insidebayarea.com/oaklandtribune>
4. Gandhi OP, Lazzi G, Furse CM. (1996) Electromagnetic Absorption in the Human Head and Neck for Cell Telephones at 835 and 1900 MHz. *IEEE Transactions on Microwave Theory and Techniques*. 44(10): 1884-1897.
5. National Cancer Institute (2008). Cellular Telephone Use and Cancer Risk. *National Cancer Institute Fact Sheet*. Retrieved May 28, 2009, from: <http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>.
6. Kan P, Simonsen SE, Lyon JL, Kestle JR. (2007) Cellular phone use and brain tumor: a meta-analysis. *J Neurooncol*. 86(1):71-8.
7. Hardell L, Carlberg M, Söderqvist F, Hansson Mild K. (2008) Meta-analysis of long-term mobile phone use and the association with brain tumours. *Int J Oncol*. 32(5):1097-103.
8. Lahkola Am Auyinen A, Raitanen J, Schoemaker MJ, Christensen HC, Feychting M, Johnansen C, Klæboe L, Lonn S, Swerdlow AJ, Tynes T, Salminen T. (2007) Mobile phone use and risk of glioma in 5 North European countries. *Int J Cancer*. 120(8):1769-75.
9. Schoemaker MJ, Swerdlow AJ, Ahlbom A, Auyinen A, Blaasaas KG, Cardis E, Christensen HC, Feychting M, Hepworth SJ, Johansen C, Klæboe L, Lonn S, McKinney PA, Muir K, Raitanen J,

DRAFT

DRAFT

- Salminen T, Thomsen J, Tynes T. (2005) Mobile phone use and risk of acoustic neuroma: results of the Interphone case-control study in five North European countries. *Br J Cancer*. 93(7):842-8.
http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&DbFrom=pubmed&Cmd=Link&LinkName=pubmed_pubmed&LinkReadableName=Related%20Articles&IdsFromRresult=17230523&ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVCitation
10. Hardell L, Carlberg M, Söderqvist F, Mild KH, Morgan LL. (2009) Long-term use of cellular phones and brain tumours: increased risk associated with use for > or =10 years. *Occup Environ Med*. 64(9):626-32.
11. Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence-SEER 9 Regs Limited Use, Nov 2006 Sub (1973-2004), National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, released April 2007, based on the November 2006 submission.
12. Dimbylow PJ, Mann SM. (1999) Characterization of energy deposition in the head from cellular phones. *Radiat Prot Dosimetry* 83:113-117.
13. Ahlbom A, Green A, Kheifets L, Savitz D, Swerdlow A. (2004) Epidemiology of health effects on radiofrequency exposure. *Environmental Health Perspectives*. 112(17): 1741-1754.
14. Sage C, Johansson O, Sage SA (2007) Personal digital assistant (PDA) cell phone units produce elevated extremely low-frequency electromagnetic fields emissions. *Bioelectromagnetics*. 24: 386-392.

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 26

No and Low Cost Precautions with Regard to Cell Phones, Blackberries and Cordless Phones

Background

Recent published summaries of epidemiological studies of cell phone and cordless phone users suggest that after ten years of heavy use there is an increased risk of malignant brain cancer and a kind of benign tumor in the inner ear, particularly on the side of the head where these phones are usually placed for use (refs) The Division of ~~Environmental~~Environmental and Occupational Disease Control has reviewed this literature and done its own unpublished meta-analysis and agrees with the above conclusion.

While the lifetime risk of acquiring a malignant brain cancer is low 0.6% (99.4% chance of NOT getting brain cancer), one would only need to multiply this small risk by a factor of 1.002 to produce an added lifetime risk of regulatory concern (an added lifetime risk of 1/100,000). The epidemiological studies suggest relative risks of anywhere from 1.2 to 3.00 in heavy users. If these statistical associations reflect a true causal influence and not some consistent study flaw (~~for~~for example differences in the way that ~~cancer~~that cancer patients and health comparison subjects remember their use of telephones/telephones), this potential effect would be of regulatory concern. It is not clear what aspect of the complex mixture of frequencies of electromagnetic fields emitted by these devices might be responsible for such an effect. There is no general agreement about biological mechanisms that might be responsible although a body of inconsistent experimental evidence has generated some hypotheses.

If these statistical associations reflect a causal process, in another decade millions of Californians and tens of thousands of state employees would find themselves at a 1.2 to 3.0 fold increased risk of brain cancer because of their heavy use of these devices. ~~For~~For these individuals the absolute added risk would range from ~~from~~from:

0.6% background lifetime risk of brain cancer * 1.2 = ~~0.72~~0.72% lifetime risk of brain cancer (~~cancer~~99.28% chance of NOT getting brain cancer)
0.6% background lifetime risk of brain cancer * 3.0 = ~~3.0~~1.8% (98.2% chance of NOT getting brain cancer)

Thus, although most cell phone and cordless phone heavy users would not get brain cancer, the number of brain cancer patients coming to hospital would increase and would represent a significant cost to society in suffering, medical costs and economic costs that one would want to avoid.

There is also epidemiological evidence (~~refs~~refs) to suggest that the use of ~~handsfree~~hands free and handheld cell phones while driving may cause distraction and a slowing of reaction times and a doubling in the risk of automobile accidents. California recently put into effect a law banning the use of hand held cell phones while driving but allows the use of hands free cell phones while driving.

~~What the State government and its Employees can Do to Lower~~
What the State government and its Employees can Do to Lower
Potential Risks from Cordless Phones and Cell Phones:

Purchasing:

- 1) The department of General Services could ask information about the intensity of extremely low frequency and high frequency magnetic and electromagnetic fields from different models of cell phones and blue tooth devices and weigh this information among other things when ordering in bulk.
- 2) The Department of General Services could ask manufacturers to provide earpieces with ferrite rings to further reduce fields created by resonance to the main field of cell phones.
- 3) State employees could avoid purchasing cordless phones for office use.
- 4) State employees should always purchase wired ear pieces to use with existing or newly purchased cell phones (some blue tooth devices also emit lower fields than those derived from holding cell phones against the ear, but these are not so well studied as wired ear pieces)

Comment: [SMW1]: Cell Phone Choice limited by service provider.

Comment: [SMW2]: Unclear this is effective, could re-radiate HMF.

Comment: [SMW3]: If required, use headset, phone away from body.

Comment: [SMW4]: Extremely lower power output than phone by factor of up to 200x.

Use

- 1) Management could have a policy that indicates which employees really need to be on constant call. These employees could have a beeper to warn them of an urgent call (these do NOT emit electromagnetic fields since they are merely receivers)
- 2) These employees could leave their cell phones and blackberries off until beeped. Then they should place them at arms length-length, use an earpiece and turn the device on to receive the message and return the call.
- 3) Employees could be encouraged NOT to make phone calls, even with an earpiece while driving. They could pull over to a safe place to make these calls.
- 4) Employees who are not required to be on call could use their cell phones as mobile answering machines. They could check them every few hours and return their calls while using an earpiece and keeping the phone at arms length while using them. Keeping the back of the phone facing away from the table will allow the phone to make connection to the nearest base station at the lowest possible power, thus further reducing exposure to the user.
- 5) At home, employees should know that cordless base stations in the home are constantly emitting fields particularly to those working near them. The phone itself provides fields equivalent to that of a cell phone when held against the head. Prolonged conversations thus provide similar exposures to that of a cell phone. Using a speaker phone and moving away from the cordless base station or switching to the cell phone and using an earpiece, keeping the cell phone at arms length will reduce exposure.

Comment: [SMW5]: Why does this mean cell phone cannot be used "closed"? Low emission with flip phone closed but powered up.

Comment: [SMW6]: Not required since low emission in idled/closed, inactive mode, but can still receive call.

Comment: [SMW7]: Encouraged but not prevented.

Comment: [SMW8]: Simply use headset or hold away from body until acquires cell tower.

Comment: [SMW9]: Evidence?

Comment: [SMW10]: Headset usage. Phone away from body.

Comment: [SMW11]: OK. Verified.

The following further advice can be found at the website of the University of Pittsburgh web site:

http://www.upci.upmc.edu/news/upci_news/072308_celladvisory.cfm

1. Do not allow children to use a cell phone, except for emergencies. The developing organs of a fetus or child are the most likely to be sensitive to any possible effects of exposure to electromagnetic fields.

Comment: (SMW12) - No fetus cell phone use

2. While communicating using your cell phone, try to keep the cell phone away from the body as much as possible. The amplitude of the electromagnetic field is one fourth the strength at a distance of two inches and fifty times lower at three feet. Whenever possible, use the speaker-phone mode or a wireless Bluetooth headset, which has less than 1/100th of the electromagnetic emission of a normal cell phone. Use of a hands-free ear piece attachment may also reduce exposures.

Comment: (SMW13) - Good guideline

3. Avoid using your cell phone in places, like a bus, where you can passively expose others to your phone's electromagnetic fields.

4. Avoid carrying your cell phone on your body at all times. Do not keep it near your body at night such as under the pillow or on a bedside table, particularly if pregnant. You can also put it on "flight" or "off-line" mode, which stops electromagnetic emissions.

5. If you must carry your cell phone on you, make sure that the keypad is positioned toward your body and the back is positioned toward the outside so that the transmitted electromagnetic fields move away from you rather than through you.

Comment: (SMW14) - Little difference between front and back in idle/closed mode, RAZAR3

6. Only use your cell phone to establish contact or for conversations lasting a few minutes, as the biological effects are directly related to the duration of exposure.

For longer conversations, use a land line with a corded phone, not a cordless phone, which uses electromagnetic emitting technology similar to that of cell phones.

7. Switch sides regularly while communicating on your cell phone to spread out your exposure. Before putting your cell phone to the ear, wait until your correspondent has picked up. This limits the power of the electromagnetic field emitted near your ear and the duration of your exposure.

8. Avoid using your cell phone when the signal is weak or when moving at high speed, such as in a car or train, as this automatically increases power to a maximum as the phone repeatedly attempts to connect to a new relay antenna.

Comment: (SMW15) - Reasonable, also turn off phone in "No Service" Areas, where output will be maximum

9. When possible, communicate via text messaging rather than making a call, limiting the duration of exposure and the proximity to the body.

Comment: (SMW16) - Same level of exposure, but just to thumbs

10. Choose a device with the lowest SAR possible (SAR = Specific Absorption Rate, which is a measure of the strength of the magnetic field absorbed by the body). SAR ratings of contemporary phones by different manufacturers are available by searching for "sars ratings cell phones" on the internet.

Comment: (SMW17) - Electric Field (V/M), Power Density, have relationship to SAR, therefore since SAR available, maybe good choice for choosing phones

Cultivating these habits and following these no and low cost measures will lower the intensity and duration of exposure to cell phones, blackberries and cordless phones substantially and may have beneficial health effects.

Case No. 34-2016-80002358

**CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S NOTICE OF LODGING RE.
PUBLIC RECORD ACT REQUEST**

DOCUMENT 27

No and Low Cost Precautions with Regard to Cell Phones, Blackberries and Cordless Phones

Background

Recent published summaries of epidemiological studies of cell phone and cordless phone users suggest that after ten years of heavy use there is an increased risk of malignant brain cancer and a kind of benign tumor in the inner ear, particularly on the side of the head where these phones are usually placed for use (refs) The Division of Environmental and Occupational Disease Control has reviewed this literature and done its own unpublished meta-analysis and agrees with the above conclusion.

While the lifetime risk of acquiring a malignant brain cancer is low 0.6% (99.4% chance of NOT getting brain cancer), one would only need to multiply this small risk by a factor of 1.002 to produce an added lifetime risk of regulatory concern (an added lifetime risk of 1/100,000). The epidemiological studies suggest relative risks of anywhere from 1.2 to 3.00 in heavy users. If these statistical associations reflect a true causal influence and not some consistent study flaw (for example differences in the way that cancer patients and health comparison subjects remember their use of telephones), this potential effect would be of regulatory concern. It is not clear what aspect of the complex mixture of frequencies of electromagnetic fields emitted by these devices might be responsible for such an effect. There is no general agreement about biological mechanisms that might be responsible although a body of inconsistent experimental evidence has generated some hypotheses.

If these statistical associations reflect a causal process, in another decade millions of Californians and tens of thousands of state employees would find themselves at a 1.2 to 3.0 fold increased risk of brain cancer because of their heavy use of these devices. , For these individuals the absolute added risk would range from :

0.6% background lifetime risk of brain cancer * 1.2= 0.72% lifetime risk of brain cancer (99.3% chance of NOT getting brain cancer)

0.6% background lifetime risk of brain cancer * 3.0 = 1.8% (98.2% chance of NOT getting brain cancer)

Thus, although most cell phone and cordless phone heavy users would not get brain cancer, the number of brain cancer patients coming to hospital would increase and would represent a significant cost to society in suffering, medical costs and economic costs that one would want to avoid.

There is also epidemiological evidence (refs) to suggest that the use of handsfree and handheld cell phones while driving may cause distraction and a slowing of reaction times and a doubling in the risk of automobile accidents. California recently put into effect a law banning the use of hand held cell phones while driving but allows the use of hands free cell phones while driving.

What the State government and its Employees can Do to Lower Potential Risks from Cordless Phones and Cell Phones:

Purchasing:

- 1) The department of General Services could ask information about the intensity of extremely low frequency and high frequency magnetic and electromagnetic fields from different models of cell phones and blue tooth devices and weigh this information among other things when ordering in bulk.
- 2) The Department of General Services could ask manufacturers to provide earpieces with ferrite rings to further reduce fields created by resonance to the main field of cell phones.
- 3) State employees could avoid purchasing cordless phones for office use
- 4) State employees should always purchase wired ear pieces to use with existing or newly purchased cell phones (some blue tooth devices also emit lower fields than those derived from holding cell phones against the ear, but these are not so well studied as wired ear pieces)

Use

- 1) Management could have a policy that indicates which employees really need to be on constant call. These employees could have a beeper to warn them of an urgent call (these do NOT emit electromagnetic fields since they are merely receivers)
- 2) These employees could leave their cell phones and blackberries off until beeped. Then they should place them at arms length , use an earpiece and turn the device on to receive the message and return the call.
- 3) Employees could be encouraged NOT to make phone calls, even with an earpiece while driving. They could pull over to a safe place to make these calls.
- 4) Employees who are not required to be on call could use their cell phones as mobile answering machines. They could check them every few hours and return their calls while using an earpiece and keeping the phone at arms length while using them. Keeping the back of the phone facing away from the table will allow the phone to make connection to the nearest base station at the lowest possible power, thus further reducing exposure to the user.
- 5) At home, employees should know that cordless base stations in the home are constantly emitting fields particularly to those working near them. The phone itself provides fields equivalent to that of a cell phone when held against the head. Prolonged conversations thus provide similar exposures to that of a cell phone. Using a speaker phone and moving away from the cordless base station or switching to the cell phone and using an earpiece, keeping the cell phone at arms length will reduce exposure.

The following further advice can be found at the website of the University of Pittsburgh web site:

http://www.upci.upmc.edu/news/upci_news/072308_celladvisory.cfm

1. Do not allow children to use a cell phone, except for emergencies. The developing organs of a fetus or child are the most likely to be sensitive to any possible effects of exposure to electromagnetic fields.
2. While communicating using your cell phone, try to keep the cell phone away from the body as much as possible. The amplitude of the electromagnetic field is one fourth the strength at a distance of two inches and fifty times lower at three feet. Whenever possible, use the speaker-phone mode or a wireless Bluetooth headset, which has less than 1/100th of the electromagnetic emission of a normal cell phone. Use of a hands-free ear piece attachment may also reduce exposures.
3. Avoid using your cell phone in places, like a bus, where you can passively expose others to your phone's electromagnetic fields.
4. Avoid carrying your cell phone on your body at all times. Do not keep it near your body at night such as under the pillow or on a bedside table, particularly if pregnant. You can also put it on "flight" or "off-line" mode, which stops electromagnetic emissions.
5. If you must carry your cell phone on you, make sure that the keypad is positioned toward your body and the back is positioned toward the outside so that the transmitted electromagnetic fields move away from you rather than through you.
6. Only use your cell phone to establish contact or for conversations lasting a few minutes, as the biological effects are directly related to the duration of exposure.
For longer conversations, use a land line with a corded phone, not a cordless phone, which uses electromagnetic emitting technology similar to that of cell phones.
7. Switch sides regularly while communicating on your cell phone to spread out your exposure. Before putting your cell phone to the ear, wait until your correspondent has picked up. This limits the power of the electromagnetic field emitted near your ear and the duration of your exposure.
8. Avoid using your cell phone when the signal is weak or when moving at high speed, such as in a car or train, as this automatically increases power to a maximum as the phone repeatedly attempts to connect to a new relay antenna.
9. When possible, communicate via text messaging rather than making a call, limiting the duration of exposure and the proximity to the body.
10. Choose a device with the lowest SAR possible (SAR = Specific Absorption Rate, which is a measure of the strength of the magnetic field absorbed by the body). SAR ratings of contemporary phones by different manufacturers are available by searching for "sar ratings cell phones" on the internet.

Cultivating these habits and following these no and low cost measures will lower the intensity and duration of exposure to cell phones, blackberries and cordless phones substantially and may have beneficial health effects.