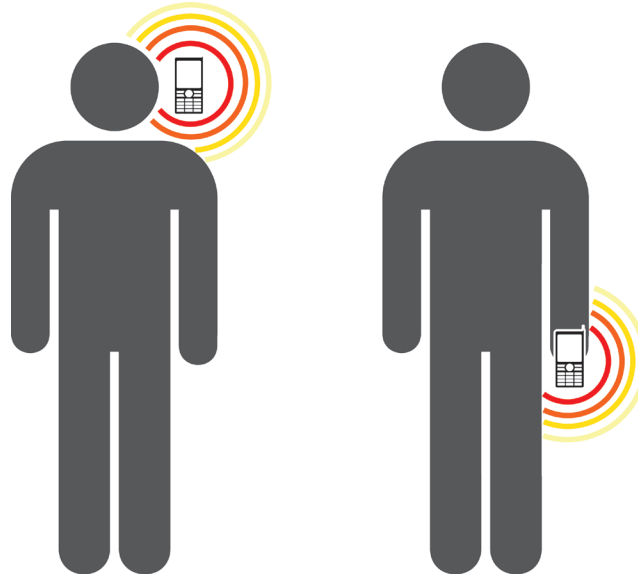




You can limit exposure to Radio-frequency (RF) Energy from your cell phone.



Although studies continue to assess potential health effects of mobile phone use, the World Health Organization has classified RF Energy as a possible carcinogen.

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If you are concerned about potential health effects from cell phone RF Energy, the City of San Francisco recommends:

- **Limiting cell phone use by children**¹⁻³
Developing brains and thinner skulls lead to higher absorption in children.⁴⁻⁸
- **Using a headset, speakerphone or text instead**⁹⁻¹¹
Exposure decreases rapidly with increasing distance from the phone.^{9,10}
- **Using belt clips and purses to keep distance between your phone and body**¹²⁻¹⁴
Do not carry on your body to at least meet the distance specified in your phone's user manual.¹²⁻¹⁴
- **Avoiding cell phones in areas with weak signals (elevators, on transit, etc.)**¹⁰
Using a cell phone in areas of good reception decreases exposure by allowing the phone to transmit at reduced power.¹⁰
- **Reducing the number and length of calls**¹⁰
Turn off your cell phone when not in use.^{9,10}



Learn More:

SF Department of the Environment @ SFEEnvironment.org/cellphoneradiation • (415) 355-3700

Federal Communications Commission @ FCC.gov/cgb/consumerfacts/mobilephone.html

World Health Organization @ WHO.int/mediacentre/factsheets/fs193/en/

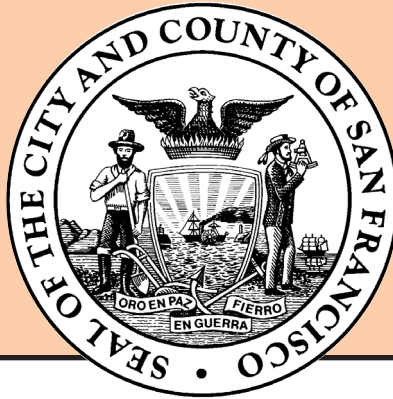
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References

- 1) **Kheifets L, Repacholi M, Saunders R, van Deventer E. 2005. The sensitivity of children to electromagnetic fields. *Pediatrics* 116(2): e303-13**
"Regarding the long-term health effects of mobile phone use, the paucity of data, particularly for children, suggests that low-cost precautionary measures are appropriate, especially because some of the exposures are close to guideline limits."
"Physicians could advise parents that their children's RF exposure can be reduced by restricting the length of calls or by using hands-free devices to keep mobile phones away from the head and body."
- 2) **Schuz J. 2005. Mobile phone use and exposures in children *Bioelectromagnetics Suppl 7: S45-50***
"As long as adverse health effects cannot be ruled out with some degree of certainty, it appears appropriate to at least instruct children and their parents about a prudent use of mobile phones. This does not mean keeping children away from a technology that also has obvious benefits, but taking precautionary measures to avoid unnecessary exposures. One such measure is to teach children when alternatives are preferable to avoid such unnecessary exposures. A second measure is to inform mobile phone users about how to use mobile phones wisely to reduce exposure by invoking power minimization..."
- 3) **Hardell L, Carlberg M, Hansson Mild K. 2009. Epidemiological evidence for an association between use of wireless phones and tumor diseases *Pathophysiology: in press, page 1***
"Concerning age, highest risk was found in the age group <20 years at time of first use of wireless phones."
- 4) **WHO IARC report (The Lancet Vol 12, July 2011, page 624):**
"When used by children, the average RF Energy deposition is two times higher in the brain and up to ten times higher in the bone marrow of the skull, compared with mobile phone use by adults." (Reference: Christ et al. Age-dependent tissue-specific exposure of cell phone users. *Phys Med Biol* 2010; 55:1767-83.)
- 5) **Wiat J, Hadjem A, Wong MF, Bloch I. 2008. Analysis of RF exposure in the head tissues of children and adults. *Phys Med Biol* 53(13): 3681-95**
"But [the simulations] indicate that the maximum SAR in 1g of peripheral brain tissues of the child models aged between 5 and 8 years is about two times higher than in adult models... Such differences can be explained by the lower thicknesses of pinna, skin and skull of the younger child models."
- 6) **de Salles AA, Bulla G, Rodriguez CE. 2006. Electromagnetic absorption in the head of adults and children due to mobile phone operation close to the head. *Electromagn Biol Med* 25(4): 349-60.**
"SAR results around 60% higher than those simulated for the adults were observed for the children with fitted parameters, independent of antenna type or frequency."
"The increase in the mean SAR in the whole head, between the adult and the child, is expected due to the reduced dimensions in the child head, as well as the higher values of the permittivity and of the conductivity in the child brain tissues. Also, children's growing skulls are thinner than those of adults, and therefore less resistant to radiation."
- 7) **Conil E, Hadjem A, Lacroux F, Wong MF, Wiat J. 2008. Variability analysis of SAR from 20 MHz to 2.4 GHz for different adult and child models using finite-difference time-domain. *Phys Med Biol* 53(6): 1511-25.**
"Results show that for adults, compliance with reference levels ensures compliance with basic restrictions, but concerning children models involved in this study, the whole-body-averaged SAR goes over the fundamental safety limits up to 40%."
- 8) **NRC. 2008. National Research Council. Identification of Research Needs Relating to Potential Biological or Adverse Health Effects of Wireless Communication, page 23**
"With rapid advances in technologies and communications utilizing RF fields, children are increasingly exposed to RF energy at earlier ages (starting at age 6 or before). Environmental exposures could be particularly harmful to children because of their vulnerability during periods of development before and after birth."
- 9) **FCC Consumer Factsheet: [FCC.gov/cgb/consumerfacts/mobilephone.html](http://fcc.gov/cgb/consumerfacts/mobilephone.html)**
"Use a speakerphone, earpiece or headset to reduce proximity to the head (and thus exposure)." "Consider texting rather than talking..."
- 10) **WHO Fact Sheet No. 193: <http://www.who.int/mediacentre/factsheets/fs193/en/>**
"A person using a mobile phone 30-40 cm away from their body – for example when text messaging, accessing the internet, or using a 'hands-free' device – will therefore have a much lower exposure to radiofrequency fields than someone holding the handset against their head."
- 11) **Cardis E., Sadetzki S. Indications of possible brain-tumour risk in mobile-phone studies: should we be concerned? *Occup Environ Med* (2010): page 2, doi:10.1136/oem.2010.061358**
"Simple and low-cost measures, such as the use of text messages, hands-free kits, and/or the loudspeaker mode of the phone could substantially reduce exposure to the brain from mobile phones."
- 12) **iPhone 4 Manual: http://manuals.info.apple.com/en_US/iPhone_4_CDMA_Important_Product_Information_Guide.pdf, page 2**
"... and only use carrying cases, belt clips, or holders that do not have metal parts and that maintain at least 15 mm (5/8 inch) separation between iPhone and the body."
- 13) **Blackberry Curve 9360 Manual: http://docs.blackberry.com/en/smartphone_users/deliverables/33307/BlackBerry_Curve_9360_Smartphone-Safety_and_Product_Information--1334716-0712122654-001-US.pdf, page 3**
"When you wear the Blackberry device close to your body, use a RIM approved holster with an integrated belt clip..."
- 14) **Motorola Droid Manual: http://www.motorola.com/staticfiles/Support/US-EN/Mobile%20Phones/DROID-by-Motorola/US-EN/Documents/Static-Files/DROID_UG_Verizon_68000202474a.pdf, page 46**
"If you wear a mobile device on your body, always place the mobile device in a Motorola-supplied or approved clip, holder, holster, case, or body harness."

You can limit exposure to Radio-frequency (RF) Energy from your cell phone.



Although all cell phones sold in the United States must comply with RF safety limits set by the Federal Communications Commission (FCC), no safety study has ever ruled out the possibility of human harm from RF exposure.

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RF Energy has been classified by the World Health Organization as a possible carcinogen (rather than as a known carcinogen or a probable carcinogen) and studies continue to assess the potential health effects of cell phones. **If you are concerned about potential health effects from cell phone RF Energy, the City of San Francisco recommends:**

- **Limiting cell phone use by children**
Average RF energy deposition for children is two times higher in the brain and up to ten times higher in the bone marrow of the skull compared with cell phone use by adults.
- **Using a headset, speakerphone or text instead**
Exposure decreases rapidly with increasing distance from the phone.
- **Using belt clips and purses to keep distance between your phone and body**
Do not carry on your body to at least meet the distance specified in your phone's user manual.
- **Avoiding cell phones in areas with weak signals (elevators, on transit, etc.)**
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