

# **No, Apple's new AirPods won't give you cancer, experts say**

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Consumer technology analysts have been calling Apple's decision to leave the earphone jack off its new iPhone 7 a risky business move. But some potential users of the iPhone 7 wonder whether Apple is asking them to take on some added risk as well.

Unless iPhone 7 users adopt a workaround that would let them plug their earphone into the device's charging jack, they will need to don headphones or earpieces that connect wirelessly to their devices. But are there health risks to putting a radiation-emitting earphone device directly in contact with one's head?

The answer, say those who have researched cellphones' radiation emissions and their health effects, is almost certainly no. Just as you could while wearing corded headphones, you can harm your hearing by listening to music too loudly and get injured by walking inattentively into traffic. But wearing a cordless headset will not increase your risk of developing cancer, they say.

The frequency on which Bluetooth devices operate is not very different from those used by mobile phones or WiFi service, so "biologically, it's not a new form of exposure," says radiation oncologist John E. Moulder, who has researched the health effects of cellular device use.

And because a Bluetooth device is communicating with a cellular device just a few feet away and not to a distant base station, "it's transmitting at quite a low power level," says University of Pennsylvania bioengineering

professor Kenneth Foster. Apple's model A1523 Bluetooth wireless iPods headset has an output of 10-18 milliwatts, and because it transmits in short, quick bursts, it transmits less than 1 percent of that energy as [electromagnetic radiation](#), he said.

The unplugged user's exposure to electromagnetic radiation "is absolutely minimal - smaller by a huge amount than the exposure of putting a phone to your ear," said Foster.

Wearable fitness devices, which also transmit bursts of data over short distances, emit similar levels of electromagnetic radiation, Foster noted. And manufacturers of these devices have an interest in keeping their power-emissions low, he added: making them more powerful would only reduce their battery life, already a touchy issue with users.

The experts' judgments do count on one crucial consumer reaction to the iPhone 7, however: that it drives more cellular device users to use earphones - wireless or not - more often. If iPhone 7 users decided to go all old-school, pasting their phones back up to their ears, said experts, they would be increasing their electromagnetic exposure and with it, their risk of health effects.

In 2011, the World Health Organization declared electromagnetic radiation emitted by mobile devices a "possible carcinogen." Extensive efforts to nail down those risks, however, have proven inconclusive so far. The preliminary findings of a U.S. government-funded study, released in May, suggested that male rats exposed to high levels of radiation like that emitted by mobile devices are at greater risk of developing cancers of the brain and the heart. But that study met with widespread criticism.

Moulder, an emeritus professor at the Medical College of Wisconsin, says that at its highest dose, the electromagnetic radiation exposure

received by rats in May's report by the U.S. National Toxicology Program "was 50 to 100 times what you would get from using a mobile phone, and they were exposed 18 hours a day for two years" -essentially their whole life, starting before birth.

By comparison, said Moulder, the additional exposure to electromagnetic radiation delivered by a wireless headphone device was "probably about a thousand times lower."

Still, in light of the uncertainty, many [mobile phone users](#) have changed their habits, holding their devices farther from their bodies and using a wired earpiece to listen to music and carry on phone conversations. Other practices, including the rise of texting, also have reduced the electromagnetic exposure many of us get from our wireless devices, which can emit several hundred milliwatts of electromagnetic radiation when operating at peak power.

Moulder said that as cellular device users have shifted their habits, our exposure to electromagnetic radiation has largely come from WiFi and exposure to the combined transmissions of cellphone users around us.

University of California, Los Angeles epidemiologist Leeka I. Kheifets said that a renewed focus on developing convenient wireless headphones might also drive more people to use them - "a positive development" if it draws them away from putting a powerful phone to their ears.

"We haven't done all we need to do in terms of looking at this technology's [health effects](#) and we need to do more," said Kheifets, of UCLA's Geffen School of Medicine. "It's worth it to be cautious and part of being cautious is to use some kind of earpiece. And exposure from the Bluetooth device would be very, very low."

Finally, a 2012 study in the Journal of Laryngology and Otology should

allay some worries that Bluetooth's electromagnetic radiation negatively affects hearing. In a pilot study that exposed 30 adult volunteers to six hours of "standby setting" and full-power for 10 minutes, researchers at Kuala Lumpur's University of Malaya found no change in subjects' ability to hear pure tones or detect distortions of otoacoustic emissions.

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