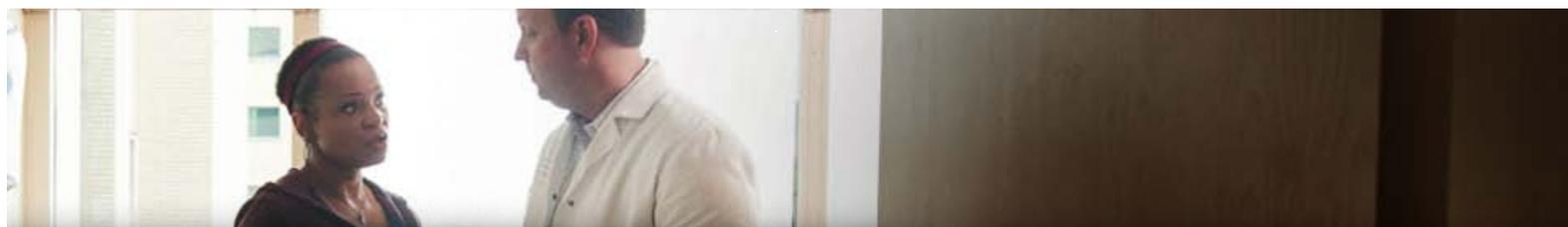




THE OFFICIAL SPONSOR OF BIRTHDAYS®

JOIN THE FIGHT AGAINST CANCER

DONATE



How can we help you?

SEARCH

Live Chat

800-227-2345

Home

LEARN ABOUT
CANCERSTAY
HEALTHYFIND SUPPORT &
TREATMENTEXPLOR
RESEARCHGET
INVOLVED

Find local ACS

[Learn About Cancer](#) » [What Causes Cancer?](#) » [Other Carcinogens](#) » [At Home](#) » [Smart Meters](#)

PRINT

SHARE

SAVE

Smart Meters

Text Size

Learn About Cancer Topics

What are smart meters?

A meter is any device that measures the use of a product such as electricity, natural gas, or water. A smart meter is a meter that has the added feature of being able to send usage information back to the product supplier on a regular basis, often many times a day. Suppliers have promoted the use of smart meters as a way for them to operate more efficiently and cheaply, as well as a way to provide consumers with real-time information about their product use.

Smart meters have been used for a number of years in some developed countries, especially in parts of Europe. They have been installed in some areas of the United States in recent years as well.

Concerns have been raised about the safety of smart meters, mainly because they give off the same kinds of radiofrequency (RF) waves as cell phones and Wi-Fi devices.

How do smart meters work?

Smart meters record the amount of the product (electricity, water, etc.) consumed over time. They differ from traditional utility meters in that they are electronic and can talk to a central computer system.

Smart meters talk to their central systems using RF transmissions, based on either cell phone, pager, satellite, radio, power line (PLC), Wi-Fi or Internet (TCP/IP) communication methods. Internet and cell phone applications have become the preferred options because of their flexibility and ease of deployment.

How are people exposed?

Smart meters are typically installed outside the home, either in place of or as part of existing meters. The level of exposure to RF energy depends on the distance from the smart meter antenna and the communications protocol used in the smart meter. The frequency and power of the RF waves given off by a smart meter are similar to that of a typical cell phone, cordless phone, or residential Wi-Fi router. However, smart meters are typically only in operation a small portion of the time because they only send and receive short messages at set intervals throughout the day (often several times an hour).

Because smart meter antennas typically are located outside the home, people are much farther away from the source of RF waves than with personal cell phones, cordless phones, or Wi-Fi routers. In addition, walls between the person and the smart meter's antenna further reduce the amount of RF energy exposure. For these reasons, the exposure to RF energy from smart meters is estimated to be much less than the typical exposure people receive through cell phones, cordless phones, and/or home Wi-Fi routers.

Can smart meters cause cancer?

Smart meters emit RF waves, which are a type of electromagnetic radiation, so there is the *potential* for them to cause harm. The *actual risk* of harm, if it exists, is likely to be extremely low, for a number of reasons.

- [Cancer Basics](#)
- [What Causes Cancer?](#)
- [Breast Cancer](#)
- [Colon/Rectum Cancer](#)
- [Lung Cancer](#)
- [Prostate Cancer](#)
- [Skin Cancer](#)
- [Show All Cancer Types](#)
- [News and Features](#)
- [Cancer Glossary](#)
- [ACS Bookstore](#)

The RF waves that smart meters give off are a form of electromagnetic energy that falls between FM radio waves and microwaves. Like FM radio waves, microwaves, visible light, and heat, RF waves are a form of *non-ionizing* radiation. They don't have enough energy to cause cancer by directly damaging the DNA inside cells. RF waves are different from stronger (*ionizing*) types of radiation such as x-rays, gamma rays, and ultraviolet (UV) light, which can break the chemical bonds in DNA. Long-term exposure to ionizing radiation is a known cause of cancer.

At very high levels, RF waves can heat up body tissues. But the levels of energy given off by smart meters are much lower, and are not enough to raise temperatures in the body.

The low levels of energy that smart meters give off at their source are further diluted by the distance they typically need to travel to reach people (unlike cell phones, for instance) and by any walls they have to pass through.

What has the research found?

Smart meters are still fairly new, so there has been very little direct research on the possible health effects of exposure to RF from smart meters. Research has been done, however, on the possible health effects of RF waves in general and from other sources. For example, a good deal of research has focused on the possible link between cell phone use and cancer in recent years.

Some research has suggested that the RF waves from cell phones might produce biological effects in human cells (in lab dishes), but it's not clear if these effects could possibly cause tumors or help them grow in people.

Several dozen studies have looked at the possible link between cell phone use and cancer (mainly brain tumors) in people. Most of these studies have not found a link, but a few studies have found a possible link. All of these studies have suffered from limitations that prevent researchers from being able to draw firm conclusions, so this continues to be an area of active research. For more detailed information, see the document, [Cellular Phones](#).

What do the experts say?

Several agencies (national and international) study different environmental exposures to determine if they can cause cancer. The American Cancer Society looks to these organizations to evaluate the risks based on evidence from laboratory, animal, and human research studies.

For example, the major goal of the **International Agency for Research on Cancer (IARC)**, which is part of the World Health Organization, is to identify causes of cancer. IARC has not assessed smart meters specifically, but it has recently classified RF radiation as "possibly carcinogenic to humans." This is based on the finding of a possible link in at least one study between cell phone use and a specific type of brain tumor. IARC considers the evidence overall to be "limited" because of the conflicting findings and generally low quality of the studies that have been done.

In general, most experts agree at this time that the evidence of a possible link between RF waves and cancer is limited. This is based on the generally poor quality of studies done so far and the fact that it's not clear how the low levels of energy in RF waves might cause cancer. But experts also agree that more research is needed to assess this risk.

Do smart meters cause any other health problems?

Many researchers continue to examine the possibility of other health effects from exposure to extremely low levels of RF energy. For example, researchers are studying the possible link between cell phone use and problems such as headaches, dizziness, vision problems, disturbed sleep, loss of memory, and the development of benign tumors of the nerve connecting the ear and the brain. So far, there is no conclusive evidence of such links.

One concern with cell phones has been whether the RF waves they give off might interfere with electronic medical devices such as heart pacemakers. According to the US Food and Drug Administration (FDA), cell phones should not pose a major risk for most pacemaker wearers, especially if the phone is kept more than 6 inches from the device as normally occurs in typical cell phone use. Because smart meters would generally be much farther away, they are not expected to pose such problems.

Could smart meters cause health problems in cancer survivors?

While RF exposure might not cause cancer directly, there is concern that cells in the body that have been damaged by exposure to some other substance might somehow be more likely to become cancerous when exposed to RF waves. In theory, this might be a concern for cancer patients being treated with ionizing radiation and/or medicines that might cause cancer themselves. There is no strong evidence to show that this is the case, but research on this issue is still in the very earliest stages.

How can I reduce my exposure to RF waves from smart meters?

There is no clear evidence at this time that RF waves from smart meters (or other devices) can cause harmful health effects. The low levels of energy from RF waves have not been clearly shown to cause problems even at close range, and the energy decreases the farther a person is from the transmission source.

If there is any increased risk, it is likely to be extremely small – even smaller than any possible increased risk from cell phones. Although it's not clear if cell phones cause any health problems, some experts recommend that people concerned about possible health effects keep the device at least 3 to 4 inches from the head to lower exposure to RF waves, just to be safe. In the case of smart meters, people are already much farther from these devices, and an added degree of safety is provided by the one or more walls between the person and the smart meter antenna.

Some people may still have health or other concerns (such as privacy) related to the use of smart meters on their homes. In some places where smart meters are being installed, people have the choice to opt in or opt out of having them. Contact your local utility provider to find out what the options are in your area.

Additional resources

More information from your American Cancer Society

The following related information may also be helpful to you. These materials may be read on our web site or ordered from our toll-free number, at 1-800-227-2345.

[Cellular Phones](#)

[Does This Cause Cancer?](#)

[Known and Probable Human Carcinogens](#)

National organizations and Web sites

In addition to the American Cancer Society, other sources of information include*:

Federal Communications Commission (FCC)

Radio Frequency Safety: <http://fcc.gov/oet/rfsafety/rf-faqs.html>

**Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at 1-800-227-2345 or visit www.cancer.org.

References

Centers for Disease Control and Prevention. Frequently asked questions about cell phones and your health. Accessed at www.cdc.gov/nceh/radiation/cell_phones_FAQ.html on September 19, 2012.

Federal Communications Commission, Office of Engineering & Technology. Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields. OET Bulletin 56, August, 1999. Accessed at http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf on September 19, 2012.

World Health Organization. Electromagnetic fields and public health: Mobile phones. Accessed at www.who.int/mediacentre/factsheets/fs193/en on September 19, 2012.

Last Medical Review: 10/05/2012

Last Revised: 10/05/2012

CANCER INFORMATION	PROGRAMS & SERVICES	ACS EVENTS	ABOUT ACS	MORE ACS SITES
Cancer Basics	Breast Cancer Support	Relay For Life	About Us	Bookstore
Cancer Prevention & Detection	Prostate Cancer Support	Relay Recess	Contact Us	ACS CAN
Signs & Symptoms of Cancer	TLC Hair Loss & Mastectomy Products	College Relay For Life	Local Offices	Gift Shop
Treatments & Side Effects	Hope Lodge® Lodging	Coaches vs. Cancer	Volunteer	Global Health
Cancer Facts & Statistics	Rides To Treatment	Cancer Prevention Study (CPS-3)	Employment	More Birthdays
News About Cancer	Online Support Communities	Making Strides Against Breast Cancer	Become a Supplier	Mobile Site
Expert Voices Blog			Press Room	

[WhatNext](#)

[Report Fraud or Abuse](#)

[Help](#)

[Site Map](#)

[Privacy](#)

[Accessibility](#)

[Terms of Use](#)

[State Fundraising Notices](#)

[Site Comments](#)



[Better Business Bureau](#)



[Health On The Net](#)



[National Health Council](#)

© 2013 American Cancer Society, Inc. All rights reserved. The American Cancer Society is a qualified 501(c)(3) tax-exempt organization. Cancer.org is provided courtesy of the [Leo and Gloria Rosen family](#).