Smart Meter Radiation – The Definitive Guide
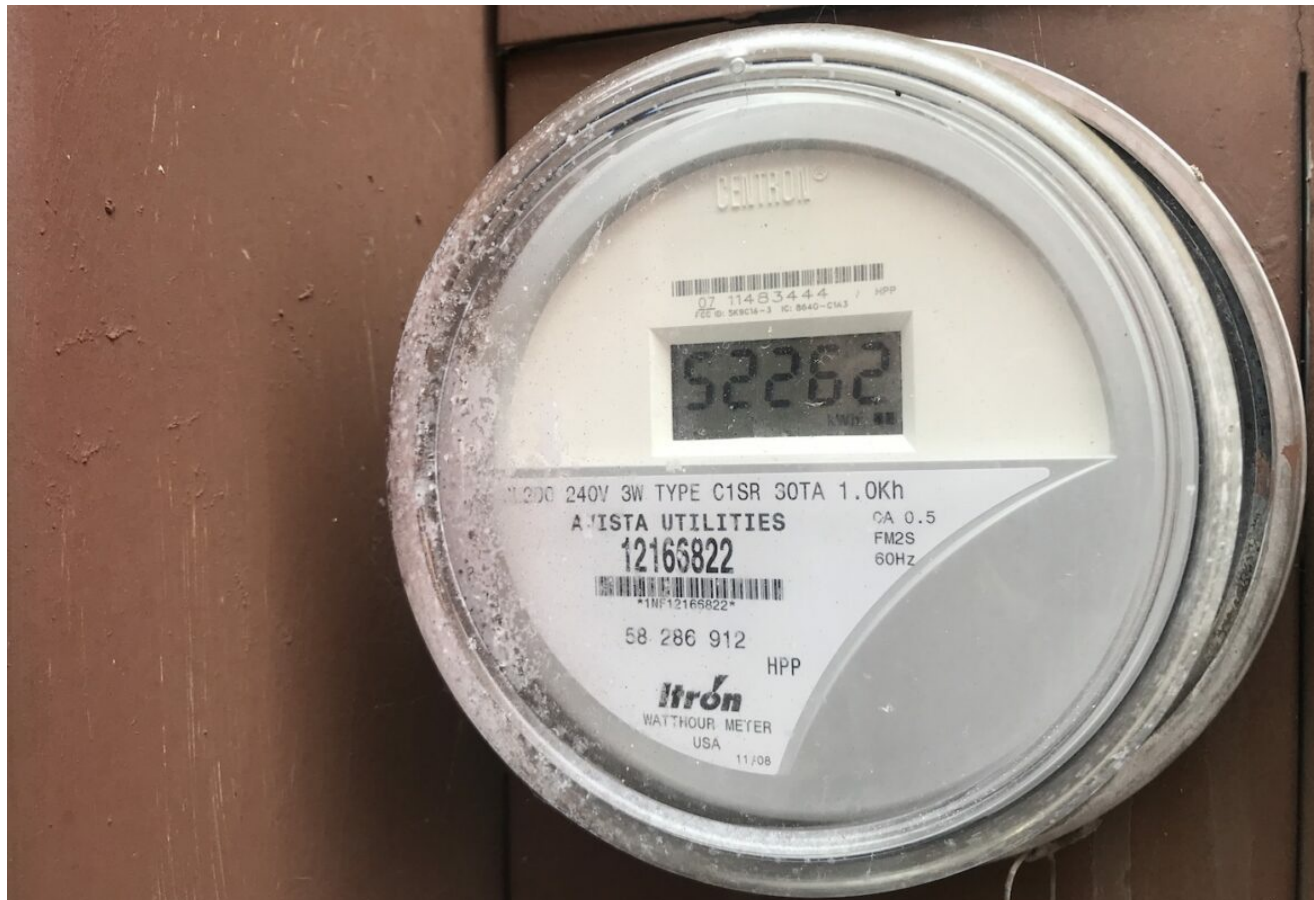
emfacademy.com/smart-meter-radiation/

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In 2017 I wrote a guide to protecting yourself from smart meters, that I felt was pretty comprehensive at the time. Amazingly, there have been so many advances in the world of smart meters, that it's time I finally wrote a definitive guide to everything we know about smart meter radiation.

With 5G already being implemented in some test markets, and smart meters being forced on more and more homeowners, there has never been a better time to gain a complete understanding of exactly what smart meters are, what kind of radiation they emit, how much, and how we can protect ourselves.

I am going to try to leave nothing out, so this will be a fairly long guide, feel free to use the table of contents below to navigate to the section most important to you.

Let's start by talking briefly about what exactly smart meters are, and then we'll talk about the radiation they emit.

What Is A Smart Meter?

So, I remember when I was younger, and once a month someone would walk through the gate of our back fence, and they would walk up to our electricity meter to jot down our usage for the month.

For a very long time, this is how all utilities were billed, they would have to send someone physically out to your home to read the meter for your electricity, gas, or water.

These were analog meters, meaning they simply measured the flow of a utility into your home, but had no wireless capabilities whatsoever, and therefore emitted to radio frequency radiation whatsoever.

However, as technology advanced, utility companies saw a huge opportunity to reduce costs by installing meters that would not only meter your utility usage but would also remotely send that information to their servers. **This virtually eliminated the need to employ people to read these meters.**

So, first we had simple analog meters, and then came what are known as AMR meters.

AMR Meters (Automatic Meter Reading)

These were the first of the so-called "smart meters." Simply meaning that they were able to remotely transmit data. AMR meters, which are still widely used, only transmit information one way. Typically, this is done by constantly emitting data via RF radiation, so that when a utility vehicle drives by, the reading can be picked up and logged.

As far as "smart meter" radiation goes, these are really not much better than the next type we'll talk about, because in order for the vehicles to obtain readings, these meters need to be transmitting every few seconds. With every transmission comes a large burst of EMF radiation.

AMI Meters (Advanced Metering Interface)

When you the term "smart meter" this is usually what people are actually talking about, even if they don't know it. These meters are the most common meter being installed in developed countries today, replacing thousands of analog meters every single day.

The reason that utility companies are using AMI meters is because it gives them significantly more control.

First of all, these smart meters are still capable of transmitting the data back to the utility headquarters. However, instead of needing to rely on a vehicle driving by to relay the information, they use existing networks and infrastructure to constantly send usage data all

the way back to the utility companies servers, regardless of their location.

However, more than that is the fact that AMI meters also receive data and controls from the utility companies. This allows them to do things such as update the firmware on the device.

However, more important than that, it allows them to control the flow of electricity, gas, or water, without having to enter your property. So, if you continue to not pay your bills, they can cut off services without having to risk the expense of sending an employee to your home or business.

Another important point to make is that old fashioned analog meters simply recorded the flow of utilities into the home, and that is all the information they had.

However, modern smart meters can also get detailed information about how that utility is being used. So, they can determine what times of day you are using the most electricity, or specifically what types of devices are using that electricity, etc. Many people feel this is an unnecessary invasion of privacy.

The problem is, that these "smart meters" are practically being forced on customers without their consent and without providing adequate information about the health and privacy risks they pose. Smart meters greatly benefit the utility companies, but provide almost benefit to the consumer, and certainly not enough to outweigh the potential risks.

Alright, now that we have a bit better understanding of what a "smart meter" is, let's talk a little bit about what we mean when we say "smart meter radiation."

Smart Meter Radiation – An Introduction

So, when you hear the term "smart meter radiation," they are actually just referring to radio frequency radiation (a type of EMF) from a smart meter. So, this is not some type of new or unique EMF radiation, they are just referring to the source.

However, the reason that you'll hear this term, is because smart meters are becoming such a ubiquitous issue, that almost everyone in developed countries like the United States, Canada, and most of Europe, is having to deal with them.

Typically, smart meters are installed on the side of your home, replacing your current analog meter. Smart meters emit a large amount of radio frequency radiation every few seconds in all directions. So, if the smart meter is installed on the wall opposite a bedroom, there is likely to be a high amount of EMF radiation penetrating into that room.

This radiation can cause all kinds of health issues, as well as reducing the quality and quantity of sleep. We'll talk more about the harms of smart meter radiation in a minute. However, before we get into that, I want to talk a little bit more about what "smart meter radiation" really is.

First of all, RF radiation is a type of non-ionizing radiation, meaning it does not have enough energy to remove charged particles. However, this does not mean it is not harmful. In fact, more and more studies are showing that just because non-ionizing radiation has no thermal effect or ionizing effect, does not mean it doesn't cause long-term health effects.

In fact, the World Health Organization has specifically listed non-ionizing radiation from things like cell-phones, WiFi routers, and smart meters as "possible carcinogens," **meaning they could increase cancer risk**s.

Even the American Cancer Society, who like many health institutes shy's away from saying much about the harms of EMF radiation, said this in their article about smart meters:

> "RF radiation is classified by the International Agency for Research on Cancer (IARC), 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. Because RF radiation is a possible carcinogen, and smart meters give off RF radiation, it is possible that smart meters could increase cancer risk."

The concern is not only that RF radiation from smart meters can cause all sorts of biological harm, but also the close proximity in which these smart meters are being installed in relation to living spaces.

Vini Khurana, an associate professor of Neurosurgery had this to say:

> "A wireless smart meter produces radiofrequency microwave radiation with two antennas in approximately the same frequency range (900 MHz to 2.4 GHz) as a typical cell tower. But, depending on how close it is to occupied space within a home, a smart meter can cause much higher RF exposures than cell towers commonly do. If a smart meter is located on a common wall with a bedroom or kitchen rather than a garage wall, for example, the RF exposure can be the same as being within 200 to 600 feet distance of a cell tower with multiple carriers. With both cell towers and smart meters, the entire body is immersed by microwaves that go out in all directions, which increases the risk of overexposure to many sensitive organs such as the eyes and testicles. With a cell phone, people are exposed to microwaves primarily in the head and neck (unless using speaker mode), and only when the device is turned on or in standby mode."

Now that we have a better understanding of what smart meters are, and an introductory understanding of what smart meter radiation is, let's take a deeper look at why this is a concern to so many.

Smart Meter Radiation – Reasons To Be Concerned

Now, I've written many articles in the <u>Knowledge section</u> of EMF Academy about the dangers of EMF radiation, which encompasses Radio Frequency, Magnetic Field, and Electric Field radiation. However, since, I already have content on these subjects, I'm going to keep this section focused solely on the radiation that Smart Meters emit, which is non-ionizing radio frequency radiation.

One of the primary problems with smart meters, is that many people don't even know that they have them. They may have had an analog meter for many years, and without even knowing it, the utility company switched it out for a smart meter.

So, now someone is being exposed to large amounts of RF radiation without really knowing it. Dr. David Carpenter, a respected researcher, Harvard trained physician, and former head of the New York State Department of public health, along with Magda Davis of the Environmental Health trust and other doctors <u>wrote a letter</u> to the Chair of the North Carolina Utilities Commission.

The letter is worth reading in its entirety because it does a good job summarizing many of the issues people have with smart meter radiation. However, instead, I want to show you just the conclusions that Carpenter chose to highlight:

> In short:
> • Smart meters operate with much more frequent pulses than do cell phones, increasing the potential for adverse health impacts.
> • Smart meter pulses can average 9,600 times a day, and up to 190,000 signals a day. Cell phones only pulse when they are on.
> • Cell phone RFR is concentrated, affecting the head or the area where the phone stored, whereas smart meter RFR affects the entire body.
> • An individual can choose whether or not to use a cell phone and for what period of time. When smart meters are placed on a home the occupants have no option but to be continuously exposed to RFR.

Take a quick look at the following video, where Dr. Carpenter responds to utility companies assurances that smart meters **are safe:**

So you may be asking yourself at this point if smart meter radiation can be even more dangerous than cell phone radiation.

In 2011 a researcher by the name of Daniel Hirsch wrote a response to a Report by the California Council on Science and Technology, titled "Health Impacts of Radio Frequency from Smart Meters"

Hirsch found that the cumulative exposure of a smart meter is more than 160 greater than that of a cellphone. Now to be fair, he measured exposure at 3 feet, but look at the chart below to get an idea of just how dangerous AMI smart meters are to public health.
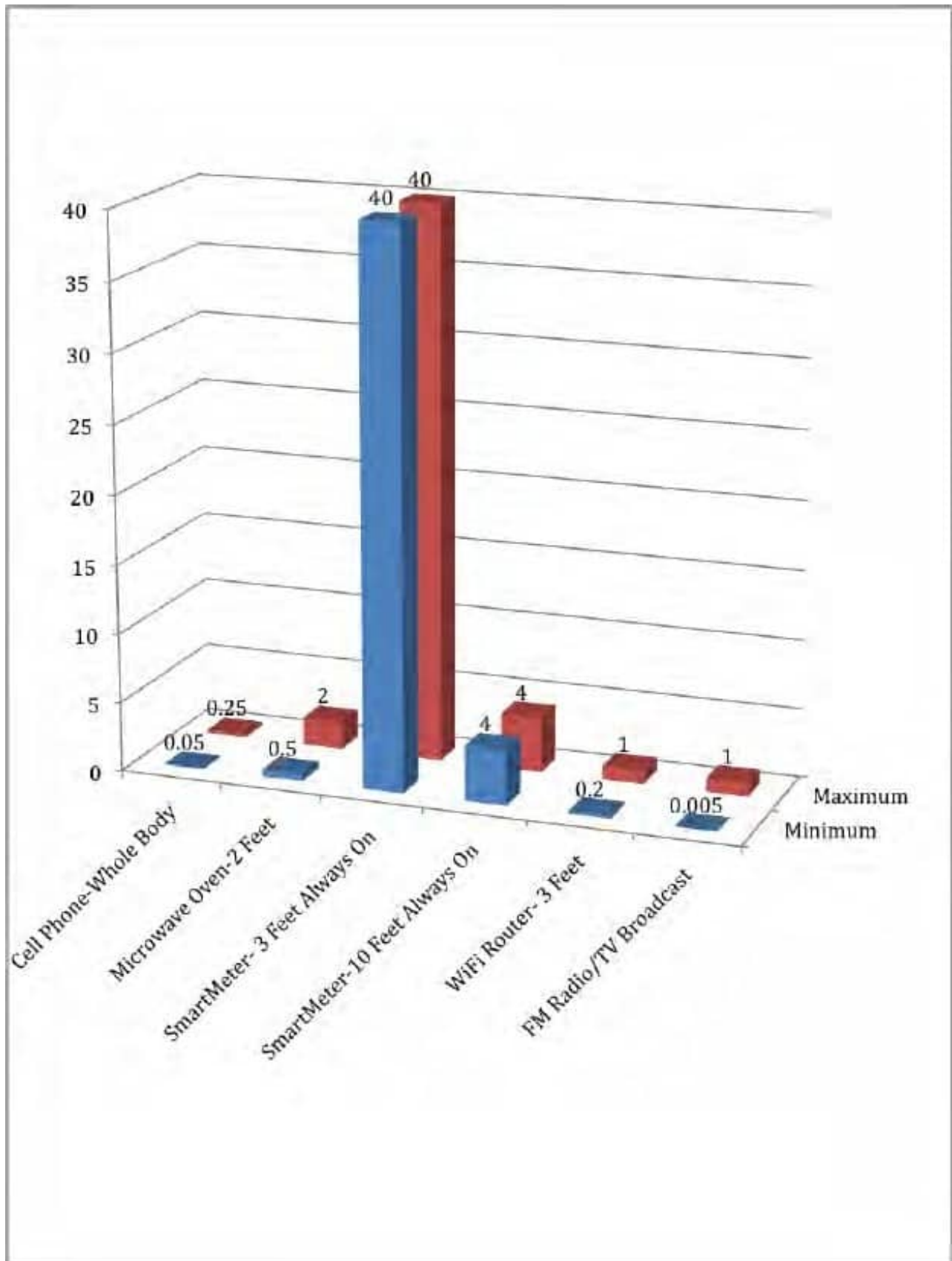
That should give you a fairly good idea of the potential danger of smart meters.

Ok, now let's talk about some of the specific studies showing the health effects of smart meter radiation.

Smart Meter Radiation Studies

Although smart meters are relatively new, especially in context with how long it can take for adverse health effects of electromagnetic fields to present themselves, there have in fact been studies specifically related to smart meters.

So, although there are many, I want to quickly highlight some of the important ones. Thanks to EMFAnalysis for finding many of these.

1. Victoria Australia Smart Meter Study

In 2014, a study was published in Alternative Therapies in Health and Medicine. The study was fairly simple. In 2006, the government of Victoria Australia mandated the rollout of smart meters. This forced RF radiation on all of the residents. Years later, well over 100 people had reported adverse health effects including:

- **Headaches**
- **Tinnitus**
- **Insomnia**
- **Fatigue**
- **Cognitive Disturbances**
- **Dysesthesias**
- **and Dizziness**

The study examined 92 residents and their reported symptoms and found that these symptoms were almost certainly the result of the radiation from the smart meter installations. None of the people reporting these symptoms had previously identified themselves as having electrohypersensitivity (EHS).

2. Smart Meter Health Effects Survey and Report

The next study I want to talk about was conducted by Dr. Richard Conrad and Ed Friedman. It involved surveying people with smart meters using an extensive questionnaire and then evaluating that data. They received data from hundreds of people who were exposed to smart meter radiation.

The report is extremely long, and hard to make your way through because it is packed with so much data.

However, here are a few important points that you should take from this:

1. **Nearly 98% of respondents were very sure or fairly sure their new or worsened symptoms correlated to smart meter exposure.**
2. The number of people identifying themselves as having electrical sensitivity more than doubled after smart meter radiation exposure.

Now, there are nearly endless studies showing the adverse health affects of radio frequency radiation that are not specifically on smart meters. However, since we know that these devices emit such a large amount of this radiation, we can use the findings to help us better understand why smart meters are so dangerous.

I wanted to specifically point out a few of the studies that were done just on the radiation emitted from smart meters.

Alright, now that we've talked about what smart meters are, why they are dangerous, and the studies that show it, let's spend some time talking about what we can do about it.

How To Protect Against Smart Meter Radiation

I'm going to break this up into a few different sections because there are a few ways you can approach this. There are many things you can do to reduce your exposure if you already have a smart meter, there are products you can use to block smart meter radiation, and there are ways you may be able to opt out of your smart meter.

I think it's important to talk about each one, in order of what I think you should do.

If you have a few minutes, watch this video. It shows what an enormous difference opting out of your smart meter (or protecting yourself from it) can make on the electrosmog in your home.
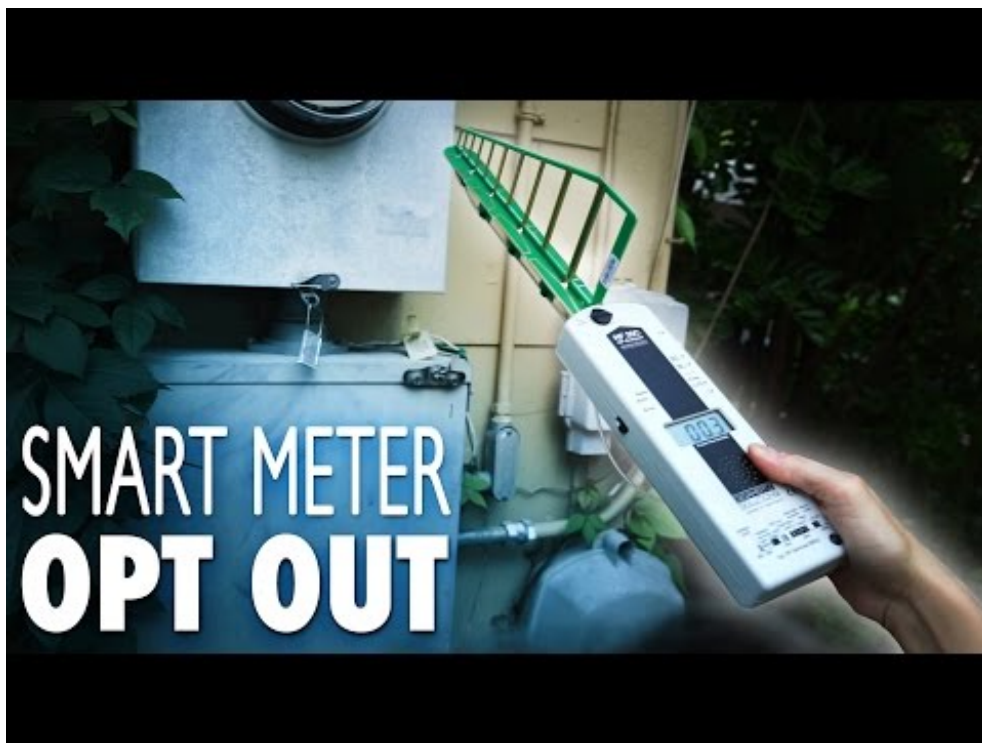
So, let's start by talking about how to see if you can opt-out of your smart meter.

However, the first thing you need to do is figure out if you smart meter installed already.

How To Know If You Have A Smart Meter

Probably the best way to know for sure if you have a smart meter is by getting a quality EMF meter that reads Radio Frequency radiation (be sure it does, not all EMF meters detect this). Personally, I use the TriField TF2 (read my review) and absolutely love it.

If this is the EMF meter that you have, simply flip the black switch all the way to the right where it says "Radio Frequency." Remember to not look at the large number in the center, but instead the peak number in the upper left corner. The reason for this is that RF is sent in packets, and is not transmitted all the time.

If you are seeing large spikes in radio frequency on your EMF meter at distinct intervals, you have a Smart Meter installed.

In addition, your meter may actually say something like "Smart Meter" or AMI or AMR on it. If you read the fine print on the meter, you may be able to determine this. Be careful though, utility companies are tricky, and some smart meters are specifically designed to look like analog meters to prevent people from opting out, this is why measuring it with an EMF meter can be really useful.

How To Opt-Out Of Having A Smart Meter

Now, just as a disclaimer, not every state offers the option to opt-out, so it's really going to depend on where you live. Also, as more and more people fight these laws, they are constantly changing. **I'm going to offer the best information currently available, and then point you to some helpful resources you can use to learn more.**

Do You Still Have An Analog Meter?

If so, there are a few things that you can do!

1. Put up a signed refusal notice somewhere near your meter saying that you do not consent to the installation of a smart meter. Depending on state law, this might not stop them in the long term, but it will at least force a conversation where you can find out more about what your options are.

   Here is a <u>sample consent letter</u> (thanks to EMF Safety Network for putting this together). Just open up the document and download, then fill it out and sign it, then post it near your smart meter.
2. If you still have an analog meter and believe that they may be near to installing smart meters in your area, you can send your utility company a letter telling them you do not consent to the installation of a smart meter. <u>Here is a sample refusal letter</u> that the EMF Safety Network put together.

Already Have A Smart Meter Installed?

This is the point where you're going to have to have a conversation with your utility company, and do some research about what laws your state currently has as far as opting out goes (we'll talk more about that in a second.

The first thing I would do is to just call your utility company, and tell them that you did not consent to the installation of a smart meter and that you are kindly requesting that they restore your analog meter. Feel free to mention that you are worried about the possible health and privacy risks and that you would feel safer with an analog meter.

Now, depending on what state you live in, this conversation will end in one of two ways.

1. They will allow you to opt-out, but will require you to pay an initial fee (usually around $50-150) as well as a monthly fee (typically from $5-20). The initial fee is to pay for the labor to reinstall the analog meter, and the monthly fee is to pay for an employee to come read the meter.
2. The other possibility, depending on the state, is that they will be required to reinstall your analog meter for no additional fee.

This is an ongoing issue both in the United States, and around the world. The problem is that the law on what utility companies are allowed to charge and enforce is quite shaky, and completely dependent on the state.

As an example, there is a growing number of people who opt-out of having a smart meter, and then refuse to pay the fee. Now, I'm not suggesting you do this, because there is always a risk of them turning off your power, or even threatening legal action. However, the point is that many of these utility companies are not taking action because they don't want the publicity shedding light on this issue.

In many states, legal action is being taken against the utility company fees on the grounds of discrimination. For instance, in Maine, the supreme court was <u>questioning the installation of these meters</u>, as well as the per-month fee being charged and the potential health concerns.

This is happening all over the country. Still, more than 50% of households in the US now have smart meters, and if you want to opt-out, the simplest option is likely just to pay the fee.

As an example, here is what Avista (my electric and gas company) charges in my current home state of Washington.

Smart meter features and benefits

Feature or benefit	Smart Meter	Opt Out
24/7 Access to Usage Information	Yes	No
Bill-to-date trend chart	Yes	No
Projected next bill	Yes	No
Remote service capabilities	Yes	No
Automatic outage detection	Yes	No
Ongoing monthly fee	Included	$5*
One-time fee if you opt out 31-days after smart meter was installed	Included	$75

*Ongoing monthly fee is waived for income qualified customers

You can see that they are trying to convince you that these "smart meters" are worth it by listing a bunch of bogus and useless "benefits." They charged me $75.00 to reinstall the analog meter, and charge me an additional $5.00 per month to keep it.

This is honestly on the low side for opt-out fees, so you'll want to just search for information, or ask your utility company or state utility board for information about fees that apply to you.

Ways To Protect Your Neighborhood From Smart Meter Radiation

Now that we've talked about what you can do to opt-out of your smart meter, let's take just a quick second to talk about ways you can spread information to your friends and neighbors. If you watched the video above, you saw them measuring the radiation emitted from a neighbors smart meter, which can actually be quite large.

Not everyone is educated on the health effects of EMF radiation, and it's good to try to share information in a **non-invasive way.**

I certainly don't want you threatening existing relationships by being pushy. However, if they're receptive to learning more, I would start by sending them a link to Take Back Your Power, a full-length documentary on smart meters.

It covers not only the smart meter radiation risks, but goes into the increased costs, fire risks, privacy risks, and more.

You can also just educate yourself with articles like this one and others, and then strike up a conversation. Or, better yet, if you already went through the process of opting out, you can tell your neighbor what that was like, and why you chose to do it.

Alright, now that we've talked about the first thing you should do, which is look into opting out, or preventing, the installation of your smart meter, let's spend some time talking about how to protect yourself from your smart meter.

How To Protect Yourself From Smart Meter Radiation

Let's talk a little bit about smart meter shields, which are a really popular product for protecting against smart meter radiation.

The first thing we're going to want to do though before we try any products or make any changes is to measure the radiation coming from our meter. Again, I would recommend the TriField TF2 (read my review). This is my favorite EMF meter, and measures all three types of EMF radiation, it's also really easy to use.

Just take your EMF meter, and hold it a foot or so away form your smart meter, directly in front of it. Give it a few minutes, and record any pulses by looking at the peak reading. Write these numbers down, and then average them to get an idea of how much radiation is being pulsed from the smart meter.

Now that we have that, it's time to try some different options for blocking the radiation, starting with a smart meter shield.

Smart Meter Shields

I'm not going to go too in-depth here, because I want to focus mostly on smart meter radiation in this article, and I already have a huge guide just on smart meter shields that you can read here.

Measure The Radiation (Important Before Applying Smart Meter Shield)

As a continuation of the last step, the first thing you need to do is get a general reading of how much radiation the meter is producing. Just like you did to determine if you have a Smart Meter, hold your EMF meter about a foot away for a few meetings, and take note of the spikes. At the end of a few minutes, average out the spikes to get a general number for how much RF radiation the device is emitting.

Ok, now that we have that reading, it's time to apply a Smart Meter Shield.

My favorite by far is from a company called Smart Meter Covers. There is another popular company called Smart Meter Guards, but they produce the exact same product and charge double the price, which is why I always recommend smartmetercovers.com when people ask.

Best Smart Meter Shields – What To Buy

If you're unable to opt-out of having a Smart Meter (check out this post for more information on that), then the next best thing you can do is shield your home from the radiation.

Luckily there are a few companies that make devices for exactly that reason.

My favorite by far is a company called Smart Meter Covers. There is another popular company called Smart Meter Guards, but they produce the exact same product and charge double the price, which is why I always recommend smartmetercovers.com when people ask.

So, what exactly is a smart meter cover?

Well, it's essentially just a small faraday cage, that you place over your smart meter, and it blocks up to 98% of the radiation emitted from the device, while still allowing it to transmit the data it needs to the utility company.

You just slip it over your smart meter, and then tighten the single bolt that it comes with, it's that simple.

You can then take your EMF meter, and measure the radiation to see how much it is being reduced.

Watch the video below if you want to see this in action.

https://youtu.be/xUxoC7Khl1o

In the video, you'll notice that they take measurements inside the home as well as outside. They mention that the grounded metal from the box behind the meter blocks most of the radiation from entering the home, and the rest is blocked by the smart meter cover.

Although this is often the case, it hasn't been the case with every home I've tested. So, I want to quickly talk about a few other things you can do to protect the inside of your home from smart meter radiation.

1. **EMF Protection Paint** – (See my review here) One way you can protect the inside of your home is with EMF protection paint. This kind of paint block EMF radiation that is coming in a direct line, so it makes a perfect product to block radiation coming from a smart meter into your home. Make sure you check out my review or look it up yourself so that you are sure to apply and ground the paint properly.
2. **EMF Blocking Frame Liner** – (Get the product here) This can be used in place of the EMF protection paint and is a really cool product. It is essentially a simple liner that

blocks EMF radiation, that can be put in any frame. This allows you to frame a picture, or poster or just about anything, and then hang that up on the wall you share with your smart meter to block the radiation. This is likely not to be quite as thorough since you can't easily cover as large of an area, but it is much simpler and cheaper than the EMF protection paint.

Alright, now that we've thoroughly covered what smart meter radiation is, why it's dangerous, and how we can protect ourselves from it, let's talk about a few important related questions and issues.

Related Questions and Issues

What Is A Safe Distance From A Smart Meter?

I want to just talk about this briefly, because I'm writing an article specifically on this issue! The problem is, you're going to hear a completely different answer depending on who is relaying the information.

In addition, there are a myriad of factors to consider such as the design of your home, layout, materials used, location of smart meter, type of smart meter (there are many brands) etc.

FCC guidelines for worker and home safety are the same as the <u>SAR ratings for your phone.</u> So, United States federal guidelines would put dangerous exposure limits at 1.6 W/kg of bodyweight. However, as you can read in many of my articles, this guideline was defined in 1996, and heaps of published data since then seems to refute that this offers much protection whatsoever.

The other problem is that just about everyone gets different measurements and readings from smart meters. Take a look at the chart below from an <u>FCC report</u>.

APPENDIX A: EMISSION LEVELS OF ITRON OPENWAY® SMART METER IN nW/CM^2 (900 MHz ANTENNA)

Distance	20 cm/8 inches	1 m/3 feet	3 m/10 feet
Common peak exposure levels of a single Itron smart meter			
Smart meter, front		ca. 1000-10,000 outdoor	
Smart meter, back		ca. 10-100 indoor	
Sage Report—CALCULATED for 90% duty cycle			
1000% reflection	8,904,390	556,520	50,090
100% reflection	1,294,360	18,400	1,660
60% reflection	188,390	11,770	1,060
ACS Compliance Testing Laboratory (RSS-210/FCC15.247)—CALCULATED without reflection factor			
900 MHz LAN	227,000	[9,000]	[1,000]
2.4 GHz ZigBee	31,000		
Electric Power Research Institute—CALCULATED for upper range of possible RF fields			
Peak level	(30 cm/1 foot) 168,360	18,727	1,683
Itron, Inc.—CALCULATED			
Centron	68,000		
Sentinel	81,000		
Richard Tell Associates, Inc.—CALCULATED with ground reflection factor 2.56			
Maximum level	adjacent to meter 10,000	1000	100
BC Centre for Disease Control—MEASURED* (at British Columbia Hydro Laboratory)			
Peak level, front	≤ 20,000	≤ 20,000	
Min. detectable level of RF Probe	≤ 20,000		
Safe Living Technologies (Ontario)—MEASURED a single smart meter at residence			
Peak level, front		≥ 2,000	
Indoor peak level, back		10-90	
Electric Power Research Institute—MEASURED a single smart meter at residence			
Peak level, front	(30 cm/1 foot) 5,337	1,134	
Indoor peak level, back		bedroom1 behind meter 61	In bath and bedroom2 55
ET&T (California)—MEASURED a single smart meter at residence			
Peak level, front	(30 cm/1 foot) 2,100		
British Columbia Hydro—As quoted in its Smart Meter Business Case			
	< 10,000		10
British Columbia Hydro—CALCULATED AVERAGE based on transmit time per day			
0.6% duty cycle (8 min)	2,000	[54]	[6]
0.06% duty cycle (1 min)	160	[6]	[0.7]

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- [] Values in square brackets are not listed in the quoted report, but inferred based on the formulas provided.

I know it's a bit confusing, but there are a few takeaways I want you to consider. First of all, readings change depending on who is taking them, the distance they are taken at, and the time of day they were recorded.

So, what is a safe distance from smart meters? The bottom line is, there isn't a perfect "safe distance" unfortunately. However, based off of my extensive research on the issue, my recommendation and opinion, is to maintain a distance of at least 30 feet if you have taken no protective measures.

If you have taken protective measures such as those listed above, you should not have to really worry about distance.

Do Smart Meters Have Cameras?

This is a bit of a misunderstanding I think. Other than the radiation from Smart Meters, another large concern is the privacy risks. Although (to my knowledge) smart meters do not have cameras, that doesn't mean they aren't, in a sense, spying on you.

Like I talked about above, smart meters read, unlike analog meters, more than just the flow of electricity for billing purposes. Smart meters understand HOW that electricity is being used. They measure what devices are using the electricity, trends about your usage, etc.

So, although smart meter's don't have cameras, they do in a sense see what you're doing. There is also a concern that as the technology of smart meters continues to develop, hackers could also control this same data.

Are 5G Smart Meter's A Thing?

This is a great question, and undoubtedly will be a huge discussion point in the future. So, first of all, to my knowledge, there haven't been any smart meters specifically developed to take advantage of 5G. Now, I think that almost certainly smart meters and 5G will interface in the future.

Some people assert that the mesh grid that currently exists between smart meters could be used to extend 5G networks, however, I couldn't find any credible proof of that yet.

Final Thoughts

Alright, I hope that you've found this guide on smart meter radiation to be at least somewhat illuminating. If there is anything you feel I didn't explain thoroughly enough, or any related questions I did not cover, please comment below so I can answer there for everyone's benefit.

If you did find this article helpful and have read this far, then it is obvious to me that you truly care about this issue. If you would do me a simple favor, I would be extremely grateful. Consider sharing this post with your friends and family. Simply copy the web address and paste it into Facebook, Twitter, an email, nail it to a tree, anything you want!

Thank you so much.

Your friend in health,

Christian Thomas