Flat And Curved Large Screen TV And Computer Monitor Sickness

Large screen televisions, computer monitors and curved screens are becoming common place. We ask the question: Are they safe?

Large Screens

Here are some of the articles that describe sickness and problems experienced by users of flat screen televisions and monitors:

“My new Samsung TV is making me sick! :-(...I just bought a Samsung Series 7 (PS50C7000) 3D plasma television and find that it's making me feel sick, dizzy and causing headaches – and I'm not even using the 3D part yet!”
http://forums.whirlpool.net.au/archive/1686111

“I just purchased a LG 55LM8600 LED TV yesterday, set it up and have noticed right away that the TV makes me sick while watching it. It's similar to having motion sickness…I recently bought a 39 inch LG LED Full Hd Tv, and experience nausea, dry red eyes, headaches, irritation and sleep disturbances after watching it for even 5 to 10 minutes.”

Curved Screens

Here are some of the articles that describe sickness and problems experienced by users of curved screen televisions and monitors:

“Motion sickness on ultrawide...AOC AG352UCG…The problem is I get a medium-intensity headache when playing...It also doesn't pass for a few hours, even after I've walked away from the PC...After almost two weeks I seem to have gotten used to it - no headaches, everything is fine. I've never had anything like that before, and I'm assuming it's either due to wide area, or the curve, not sure.”
https://www.reddit.com/r/ultrawidemasterrace/comments/62ss54/motion_sickness_on_ultrawide/

“A review of my new Samsung curved TV: I hate it so much... The screen is curved, which means that it picks up and seemingly magnifies every glimmer of light in the room...The curved screen demands that you sit dead center of the TV unless you want to observe the equally frustrated facial expressions of the person sitting opposite you on the couch trying in vain to see through the glare. The glare is ridiculous.”
“Ultrawide 21:9 flat vs curved and how it relates to motion sickness... I suffer from bad motion sickness. I have found that a 26 or 27 inch 16:9 is about the limit as far as height is concerned to where I don't get symptoms...When I went from 55 inch 1080p to 65 inch 4K I felt a little sick the tv was just so big...I often get dizzy when playing games. I haven't noticed an improvement moving from flat 16:9 to curved 21:9. If anything I get more dizzy because of the 21:9 screen taking up more of my peripheral vision.”

“Curved TV's Yea or Nay...Just got a 60" Samsung SUHD TV and we are liking it. It also comes in a curved model but we hated looking at the picture from anywhere other than straight on…I have a 60" Samsung SUHD with the curved screen, if you sit mostly in the center it doesn't have much effect, however it definitely makes peripheral viewing better.”

“Refraction and visual fatigue syndrome on watching the ULTRA HD 4k television curved screen system...To evaluate eye sensitivity disorder (similar to glare), with symptoms of visual fatigue, through watching television ULTRA HD3D-55-inch 4K curved screen among volunteers with normal eye examination...High resolution television screens ULTRA HD 4K may cause complaints of eyestrain in a population with some uncommon characteristics (low eyelid blink frequency and conjugated saccades movements).”

“Motion Sickness in Gaming (Motion Blur)...i have never felt sick from a flat panel, but curved screens are unusable to me because i for some reason get pretty sick from them. VR is completely fine, flat panels are also fine, but not curved monitors or TVs.”

“Motion sickness and Headache with 21:9 since patch...I get headaches and nausea when playing Overwatch in 21:9 on my 34UC88(34 inch curved monitor).”

Ultra Wide Screens

Here are some of the articles that describe sickness and problems experienced by users of ultra wide 21:9 screen televisions and monitors:

“Motion sickness and Headache with 21:9 since patch...I tried out 21:9 and it just made me feel sick to my stomach, a little dizzy (slight vertigo), and gave me a headache.”
Cyber Sickness

“Feeling Woozy? It May Be Cyber Sickness...If you are watching computer-generated mayhem in the latest action film or scrolling rapidly on your smartphone, you may start to feel a little off. Maybe it is a dull headache or dizziness or creeping nausea.”  
[https://well.blogs.nytimes.com/2015/11/14/feeling-woozy-it-may-be-cyber-sickness/]

“8 Physical Risks Of Too Much Screen Time...The dangers of excessive screen time that we hear about most often relate to happiness, relationships and self-worth; it’s rare to consider the physical dangers associated with our digital devices. But it’s all too easy to fall into bad habits when using technology, whether it’s crouching over your phone on the subway or staring at the screen for longer periods than you should.”  
[https://www.huffingtonpost.com/entry/technology-health-physical-effects_us_564a1df4e4b045bf3df03368]

“Do YOU suffer from 'cybersickness'? Phenomenon causes nausea while scrolling on phones and watching action films...Among those who have reported experiencing the condition have been video gamers who spend hours playing fast paced games. Cinema-goers have struggled with some scenes in action movies which have quick cuts and fast editing - and virtual reality has made the problem even worse.”  

Motion Sickness

“Motion sickness...Motion sickness is a condition in which a disagreement exists between visually perceived movement and the vestibular system's sense of movement. Depending on the cause, it can also be referred to as seasickness, car sickness, simulation sickness or airsickness.[1] Dizziness, fatigue and nausea are the most common symptoms of motion sickness.[2] Sopite syndrome, in which a person feels fatigue or tiredness, is also associated with motion sickness. "Nausea" in Greek means seasickness (naus means ship).[3][4] If the motion causing nausea is not resolved, the sufferer will usually vomit. Vomiting often will not relieve the feeling of weakness and nausea, which means the person might continue to vomit until the cause of the nausea is treated.”  
[https://en.wikipedia.org/wiki/Motion_sickness]

“Why staring at screens is making us feel sick. We can watch HD films on the train and play games in VR headsets but there's a hitch – motion sickness.”  
[https://www.theguardian.com/technology/shortcuts/2015/nov/18/why-staring-at-screens-is-making-us-feel-sick]
Motion Blur

“Motion Sickness in Gaming (Motion Blur)...I've had motion sickness while gaming if the screen movements don't match my inputs or lag behind...I think motion blurs increases my chances of getting motion sick.”

“New S7 screen makes me nauseous...with the iphone there is a "reduce motion" option- that totally cleared it up for me but that motion was from the icons for the apps, swiping side to side or going in/out of an app.”
https://us.community.samsung.com/t5/Galaxy-S-Phones/New-S7-screen-makes-me-nauseous/td-p/9023

“Users Report iOS 7 Problems, Including Nausea, Vertigo, Headaches, From New Apps And Animations”

Flicker

Flicker is a problem that typically they eye cannot see, but the mind can. It can occur on some televisions from new and in others as they age. If you can see your screen visibly flickering, then it is time to replace it to protect your long term health:

“Flicker of a CRT monitor can cause various symptoms in those sensitive to it such as headaches in migraine sufferers and seizures in epileptics[citation needed]. As the flicker is most clearly seen at the edge of our vision there is no obvious risk in using a CRT, but prolonged use can cause a sort of retinal shock where the flickering is seen even when looking away from the monitor. This can create a sort of motion sickness, a discrepancy between the movement detected by the fluid in the inner ear and the motion we can see. Symptoms include dizziness, fatigue, headaches and (sometimes extreme) nausea. [citation needed] The symptoms usually disappear in less than a week without CRT use, and usually only last a few hours unless the exposure has been over a long period.”
https://en.wikipedia.org/wiki/Flicker_(screen)

Insomnia

Insomnia is a common report by users of screens. It is usually time based and the longer you watch a screen, the more likely it is to induce insomnia into you. Blue light exposure from the screen is known to suppress melatonin production that may lead to insomnia.

“Blue light has a dark side. Exposure to blue light at night, emitted by electronics and energy-efficient lightbulbs, can be harmful to your health.”
https://www.health.harvard.edu/staying-healthy/blue-light-has-a-dark-side
Computer Vision Syndrome

“Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a computer or other display device for protracted, uninterrupted periods of time and the eye muscles being unable to recover from the strain due to a lack of adequate sleep. Some symptoms of CVS include headaches, blurred vision, neck pain, fatigue, eye strain,[1] dry eyes, irritated eyes, double vision, vertigo/dizziness, polyopia, and difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions (i.e. glare,[2] strong blue-spectrum backlights,[3] or bright overhead lighting) or air moving past the eyes (e.g. overhead vents, direct air from a fan).”

Computer Sickness

“Is your computer making you sick? How digital devices are damaging your health...Electronic screens aren’t just leaving us wired and tired, they’re affecting our health in a very real and very damaging way.”
https://www.tonyrobbins.com/health-vitality/computer-making-sick/

Curved Screen Lens

Curved screens do lens light to the users eyes:

- Screen pixels are better aligned to the eyes and face and these absorb more of the light emitted from the curved monitor.
- Reflections are concentrated and directed into the users eyes and face causing more reflected light from the room to be absorbed.
- Direct sunlight reflected from the curved screen may have the ability to set home furnishings on fire, particularly if they are situated at the focus point of the curved screen.

Long term exposure to concentrated light from curved screens is currently unknown. Due to the potential fire risk of reflected concentrated sunlight from the curved screen, they should not be installed into areas where the curved screen has a direct view of the Sun.

HDTV Fires

Fires are being reported by owners of large screen televisions:

“HDTVs are catching fire … literally...Malfunctions were not limited to Vizios. Samsung and Polaroid TV owners complained about smoking TV sets too...To steal a phrase from old Smokey the Bear: Only you can prevent TV fires.”
https://www.nbcnews.com/technolog/hdtvs-are-catching-fire-literally-123020
“Samsung TV caught fire...we heard a loud pop, saw smoke pouring out and a small fire behind the TV. The fire went out about 3 second after we noticed it but smoke continued pouring out. I unplugged the TV and called Samsung. Their response is they don't care. Worried about my Samsung 60 inch that is hanging on my wall.”
https://www.cnet.com/forums/discussions/samsung-tv-caught-fire/

Refresh Rates

The common screen refresh rates in general use are:

• 24 Hertz.
• 25 Hertz.
• 30 Hertz.
• 50 Hertz.
• 60 Hertz.
• 100 Hertz.
• 120 Hertz.
• 200 Hertz.
• 240 Hertz.

Some people may be more sensitive to to particular refresh rates. If your screen is making you sick, changing the screen refresh rate may help alleviate the symptoms.

“On smaller CRT monitors (up to about 15 in or 38 cm), few people notice any discomfort between 60–72 Hz. On larger CRT monitors (17 in or 43 cm or larger), most people experience mild discomfort unless the refresh is set to 72 Hz or higher. A rate of 100 Hz is comfortable at almost any size. However, this does not apply to LCD monitors. The closest equivalent to a refresh rate on an LCD monitor is its frame rate, which is often locked at 60 fps. But this is rarely a problem, because the only part of an LCD monitor that could produce CRT-like flicker—its backlight — typically operates at around a minimum of 200 Hz....As movies are usually filmed at a rate of 24 frames per second, while television sets operate at different rates, some conversion is necessary. Different techniques exist to give the viewer an optimal experience. The combination of content production, playback device, and display device processing may also give artifacts that are unnecessary. A display device producing a fixed 60 fps rate cannot display a 24 fps movie at an even, judder-free rate. Usually, a 3:2 pulldown is used, giving a slight uneven movement.”
https://en.wikipedia.org/wiki/Refresh_rate

Three Dimensional (3D) Images

Three dimensional images were promoted by the screen industry with many screens being able to produce them. They are rarely seen today and the industry cites lack of consumer demand for phasing out 3D screens. It is well known that motion sickness is typically worse when watching a 3D image and this may have been a factor in the lack of demand for the 3D screens.
“Some viewers have complained of headaches, seizures and eyestrain after watching 3D films.[94][95] There have been several warnings, especially for the elderly.[96] Motion sickness, in addition to other health concerns,[97] is more easily induced by 3D presentations. There are primarily two effects of 3D TV that are unnatural for the human vision: crosstalk between the eyes caused by imperfect image separation and the mismatch between convergence and accommodation caused by the difference between an object's perceived position in front of or behind the screen and the real origin of that light on the screen.[98] It is believed that approximately 12% of people are unable to properly see 3D images, owing to a variety of medical conditions.[99][100] According to another experiment, up to 30% of people have very weak stereoscopic vision preventing depth perception based on stereo disparity. This nullifies or greatly decreases immersion effects of digital stereo to them.[101]”

https://en.wikipedia.org/wiki/3D_television

“A survey of visually induced symptoms and associated factors in spectators of three dimensional stereoscopic movies...The high occurrence of visually induced symptoms resulting from this survey suggests the need of raising public awareness on possible discomfort that susceptible individuals may suffer during and after the vision of 3D movies.”

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3490878/

Low Resolution Images & 480i Sickness

Watching low resolution images on a large screen televisions or monitors is undesirable. It causes visible pixels, blurry images, low frame rates and video conversion artifacts. Most people do this when they watch 480i broadcasts television, old DVD’s, old movies, or low quality video on large screens. I call the resulting sickness that may occur “480i sickness”. It appears to be a form of motion sickness.

Electromagnetic Radiation

Screens emit electromagnetic radiation from them, which is commonly called electromagnetic interference (EMI). Long term exposure to electromagnetic radiation may make some users sick.

“some research has been conducted to show that weaker non-thermal electromagnetic fields, (including weak ELF magnetic fields, although the latter does not strictly qualify as EM radiation[39][40][41]), and modulated RF and microwave fields have biological effects.[42][43][44] Fundamental mechanisms of the interaction between biological material and electromagnetic fields at non-thermal levels are not fully understood.[39] The World Health Organization has classified radio frequency electromagnetic radiation as Group 2B - possibly carcinogenic.[45][46] This group contains possible carcinogens such as lead, DDT, and styrene. For example, epidemiological studies looking for a relationship between cell phone use and brain cancer development, have been largely inconclusive, save to demonstrate that the effect, if it exists, cannot be a large one. At higher frequencies (visible and beyond), the effects of individual photons begin to become important, as these now have enough energy individually to directly or indirectly damage biological molecules.[47] All UV frequencies have been classed as Group
1 carcinogens by the World Health Organization. Ultraviolet radiation from sun exposure is the primary cause of skin cancer.[48][49]
https://en.wikipedia.org/wiki/Electromagnetic_radiation#Biological_effects

Dirty Electricity

Some screens may cause dirty electricity to occur on the electrical system of the home or office. Long term exposure to this dirty electricity may make some users sick. Dirty electricity effects are a form of electromagnetic radiation exposure.

“When Thomas Edison began wiring New York City with a direct current electricity distribution system in the 1880s, he gave humankind the magic of electric light, heat, and power; in the process, though, he inadvertently opened a Pandora's Box of unimaginable illness and death. Dirty Electricity tells the story of Dr. Samuel Milham, the scientist who first alerted the world about the frightening link between occupational exposure to electromagnetic fields and human disease. Milham takes readers through his early years and education, following the twisting path that led to his discovery that most of the twentieth century diseases of civilization, including cancer, cardiovascular disease, diabetes, and suicide, are caused by electromagnetic field exposure. In the second edition, he explains how electrical exposure does its damage, and how electricity is causing our current epidemics of asthma, diabetes and obesity. Dr. Milham warns that because of the recent proliferation of radio frequency radiation from cell phones and towers, terrestrial antennas, Wi-Fi and Wi-max systems, broadband internet over power lines, and personal electronic equipment, we may be facing a looming epidemic of morbidity and mortality. In Dirty Electricity, he reveals the steps we must take, personally and as a society, to coexist with this marvelous but dangerous technology.”
http://a.co/53SPvLh

Smart Televisions

Smart internet connected televisions have almost replaced conventional televisions. They used to be supplied with a network connection and these are now being replaced by wireless Wi-Fi only smart televisions:

“Seen At 11: Woman Says Her Wi-Fi Connection Is Making Her Sick... From using cell phones and computers to watching movies online, wireless technology has made life easier. But now, some say there is a serious downside...there are those who claim that exposure to Wi-Fi is making people sick, and some people don’t even know it...Brain fog...Headaches, perspiration, pain in my jaws and my heart. It’s like physical expansion of the heart.”
https://newyork.cbslocal.com/2015/05/20/sick-from-wifi/

“Could Wifi be harming YOUR health? That's what a growing number of people believe is triggering their headaches, nausea and crippling pain...Up to 5 per cent of the population — more than 3 million people — believe they are affected by some degree of electro-sensitivity, an allergy to the radiowaves and microwaves emitted by devices.”
Video Game Aggression

Video games are associated with increased levels of aggression:

“Florida shooting: Video gamers killed by rival at tournament”

“Do video games make people violent?...The research demonstrates a consistent relation between violent video game use and increases in aggressive behaviour, aggressive cognitions and aggressive affect, and decreases in pro-social behaviour, empathy and sensitivity to aggression”
https://www.bbc.co.uk/news/technology-33960075

“Video games and mental health: 'Nobody's properly talking'...research shows that while gaming does cause emotional changes in players, these are all short-lived - a spike in happiness if you win or rage quitting (that's stopping playing a game in anger, in case you didn't know).”
https://www.bbc.co.uk/news/newsbeat-44662669

“Digital Dementia. Video games improve attention, but is there also a link with dementia?...We know that action video gaming is linked with greater brain volume in the striatum, but this may be at the expense of a reduction in hippocampal volume. Although this proposal requires further investigation, previous research has shown that reduced grey matter in the hippocampus is associated with an increased risk for schizophrenia, post-traumatic stress disorder, depression and dementia, amongst other disorders.”

“Gaming addiction classified as disorder by WHO...Gaming addiction is to be listed as a mental health condition for the first time by the World Health Organization.”
https://www.bbc.co.uk/news/technology-42541404

Animation sickness

Animations may amplify motion sickness effects:

“Why Video Games Make You Feel Sick (and What You Can Do About It)...If you get headaches or nausea on occasion (or even all the time) while playing games, you’re not alone. I, and countless other players, have experienced video-game induced symptoms over the years. More than a few marathon sessions of Goldeneye on the Nintendo 64 in my youth ended up with me laying on the floor feeling like I’d just ridden the world’s most extreme roller coaster.”
“How developers are trying to solve motion sickness in video games...In an industry banking on the draw of realistic visuals and dizzingly-paced action sequences, motion sickness is not uncommon. How serious of an issue it is varies from game to game and player to player”

“Motion sickness...overhead foliage, such as large tree branches, or clumps of trees (like the ones to the left, just after the car crash site) seem to have a clipped animation loop, causing it to appear jerky, snapping back to the cycle beginning without fluidly moving through a complete cycle. Like the ends of the animation are cut off. That jerky, jumpy animation cycle triggered some motion sickness each time I stopped and watched it for more than a few seconds.”
https://steamcommunity.com/app/365160/discussions/5/133256080235603817/

“Motion Sickness From Reading and Scrolling Text...I've played lots of PS2 games that supposedly have 60fps, and with no problem. After some trial and error, I found that 60fps motion sickness seems related to the distance from the screen. The motion sickness is reduced if viewed from far. So I was playing those games from quite far away. And only when the screen has intense movements like swinging, rotations and panning, would I get sick. But if the screen is viewed close up (reading text), I would get sick even with slight scrolling movements.”
https://joshtam.net/motion-sickness-from-reading-and-scrolling-text.html

“Visually induced motion sickness, visual stress and photosensitive epileptic seizures: what do they have in common?...measures to reduce incidents of visually induced motion sickness (VIMS), visual stress (VS), and photosensitive epileptic seizures (PES) were on the top of the workshop’s agenda...PES is an abnormal brain activity triggered by viewing certain visual stimuli. Its symptoms are clearly measurable by EEG recordings and about 1 in 4000 persons in the United Kingdom are susceptible”
https://www.semanticscholar.org/paper/Visually-induced-motion-sickness%2C-visual-stress-and-So-Uijke/0da12bd5383b08913c12860fb462cc3ada4a6d8d

Digital Dementia

“Digital Dementia and 7 Tips to Avoid It...Digital dementia is characterized as the deterioration of brain function as a result of the overuse of digital technology, such as computers, smart phones and Internet use in general.”
https://www.nontoxicliving.tips/blog/digital-dementia-what-it-is-7-tips-to-avoid-it

“Overuse of Technology Can Lead to 'Digital Dementia'...a term coined by top German neuroscientist Manfred Spitzer in his 2012 book of the same name, is a term used to describe how overuse of digital technology is resulting in the breakdown of cognitive abilities in a way that is more commonly seen in people who have suffered a head injury or psychiatric illness.”
https://www.alzheimers.net/overuse-of-technology-can-lead-to-digital-dementia/
“New ‘digital dementia’ plaguing young tech users...is affecting younger individuals in their early 20s and teens...Common symptoms of digital dementia include memory problems, shortened attention spans and emotional flattening.”

What Does The Author Use?

- Television: Vizio flat screen 32” LED 720P HDTV.
- Computer: Samsung Curved 1080P 24” monitor.

After researching monitors and televisions, I found that flat was better for the television due to the multiple angles that numerous viewers use to watch it. The curve on the computer monitor does give better pixel alignment to the eye of the sole user and more consistent colors and brightness across the display. Curved monitors should not be used by designers, as they do make straight lines appear curved. Some people may be sensitive to these curved distortions in the image.

I started using a curved monitor in February 2016. In June 2018 decided to take my curved computer monitor out of service for a few weeks to see if there was any difference in health that could be observed. I found that the reflective glare of the window that was behind me was far worse on the 15” flat screen laptop screen and I preferred the curved monitor. The flat screen was clearly reflecting a well defined image of the bright window to my eyes.

Summary

Are they safe? It appears to be unique to the individual. Every screen type may be okay with the majority of people but not with some others. If you are being affected by your screens then you may become fatigued or sickly. Taking them out of service for one month is recommended to evaluate that sickness. If the sickness clears up, you will know that your screens were causing it.

The human can adapt to motion sickness and the malady may last a few days, weeks or months before the adaption takes place. It is known that approximately ten percent of the population is sensitive to motion sickness effects and some of these people may never adapt to a screen that is making them sick. Such people may stay in a state of permanent sickness until the sickening screen is removed from their daily environment.

Screen induced insomnia is common and the brightness and blue light in the display should be turned down for nighttime viewing. A small screen is preferable for nighttime viewing, as it reduces the amount of insomnia causing light that the eyes receive.

Screen time should be limited and less is better. It is preferable to watch screens in bright rooms during the daytime rather than in dark rooms at night. Nighttime viewing is typically the most hazardous exposure to screens.
Computer generated video may be more hazardous to health than real life video. Computers can introduce unnatural artifacts that may make screen induced sickness worse.

The size of the display is critical and should be chosen based on the distance that your eyes are from the screen and the lowest resolution graphics that are displayed on it. You can use a screen size calculator to obtain the correct screen size:

- “TV Size to Distance Calculator and Science” [https://www.rtings.com/tv/reviews/by-size/size-to-distance-relationship](https://www.rtings.com/tv/reviews/by-size/size-to-distance-relationship)

The safest televisions and computer monitors that cause the least amount of health problems are generally the smallest. For example:

- A person that sits 12 feet (144”) away from their television should be using a 32” or smaller television when watching 480i resolution video.
- A person that sits 2 feet (24”) away from their computer monitor should be using a 16” or smaller monitor when watching 1080p resolution video.

Regarding electromagnetic radiation, dirty electricity and Wi-Fi exposures, a building biologist can be used to characterize these issues:

EMF Consultants list: [https://www.electricsense.com/3125/emf-consultants-list/](https://www.electricsense.com/3125/emf-consultants-list/)

Your screens should be installed into areas that are away from flammable items, such as curtains, as they are known to go on fire. A wall mount may help keep a screen away from such items.

It is important that you do not get addicted to screens and screen time should be limited for good health outcomes. I hope that you enjoyed this discussion about the known toxicity of screens and I wish you the best of health.

“Large or small, flat or curved, normal or wide screen comes down to the application and the sensitivity of the users to reflections, brightness, flicker, motion, blur and/or electromagnetic radiation regarding television and computer monitor screen sizes.”

Steven Magee – Author of Light Forensics