

What do incandescent, fluorescent & LED light bulbs emit?

Selected Slides from Presentation at Light Symposium in Wismar, Germany from Oct 14–16, 2016.

The slide features a portrait of Professor Dr. Magda Havas on the top left. To her right is the Trent University logo, which includes a stylized tree and the text 'TRENT UNIVERSITY SCHOOL OF THE ENVIRONMENT'. In the top right corner, there is a grid of small squares above the text 'LIGHTSYMPOSIUM WISMAR 2016', 'FUTURE OF HEALTHY LIGHT & LIGHTING IN DAILY LIFE', and 'OCTOBER 12 -14'. The main title 'Electrosmog, Electrohypersensitivity & LED Light Bulbs.' is centered. Below it, the speaker's name and affiliation are listed: 'Professor Dr. Magda Havas, Trent University, Canada'. At the bottom left is the Hochschule Wismar logo, and at the bottom right is the FGW logo. The footer text reads 'LSW 2016 • 12-14 October 2016 • Hochschule Wismar • Wismar / Germany'.

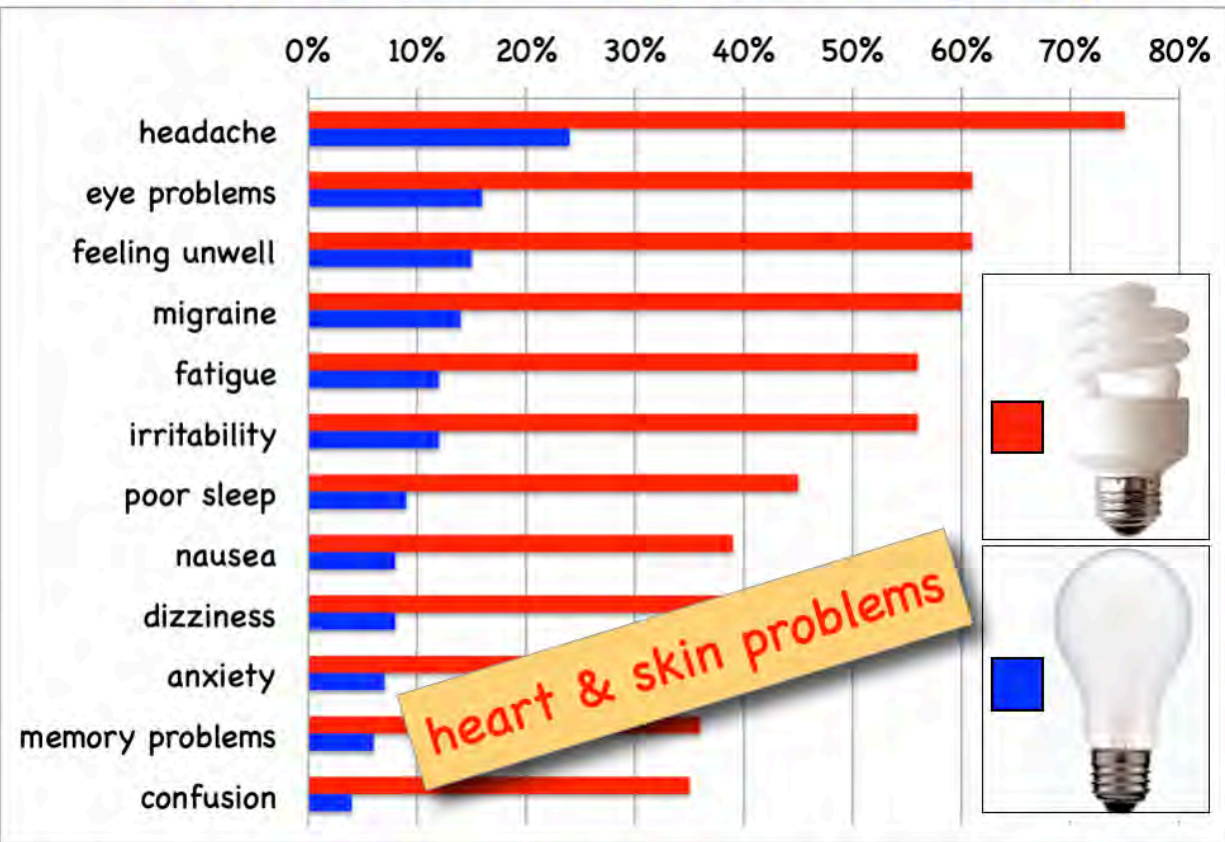
Magda Havas, Prepared for Electrosmog Email Group, May 1, 2020.

1

We conducted a survey and asked people to rank themselves based on their self-perceived EHS.

One of the questions we asked them was about light bulbs. This is how they responded.

Very EHS (n=83) - Response to Lighting



NOTE: When we distributed this questionnaire LEDs were not available at an affordable price, were not being widely used and so they were not included in the survey.

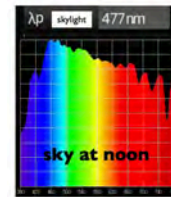
2

We asked the Question, “What do CFLs emit?”

The answer was: dirty electricity on wires, RF through air, light flicker, choppy visual spectrum, some ELF E-Field and M-Field, some IR (infra red) and UV (ultraviolet).

3

We later tested LEDs as they became available and the is what we found.



incandescent



fluorescent



LED



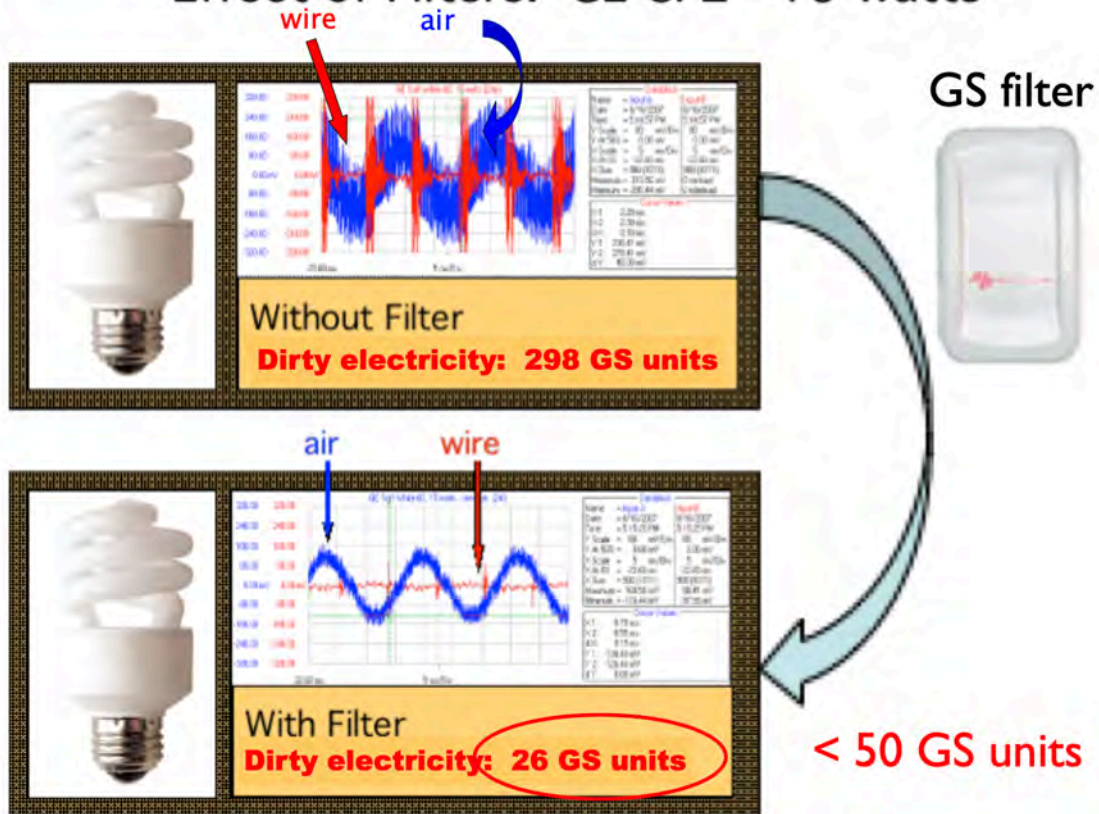
Electromagnetic Frequencies						
Light	Light Flicker	Infrared (heat)	UV	ELF E-field M-field	IF Dirty Electricity	RFR MW
 incandescent	little	yes	no	little	no	no
 fluorescent	yes	little	yes	little	yes	little
 LED	yes	little	no	little	yes	yes no

4

This is what dirty electricity looks like as it travels along a wire (red) and through the air (blue) (Fluke Scopemeter running on battery).

One GS Filter reduced dirty electricity on wire and in air. There are now other manufacturers of filters for dirty electricity.

Effect of Filters: GE CFL - 15 watts

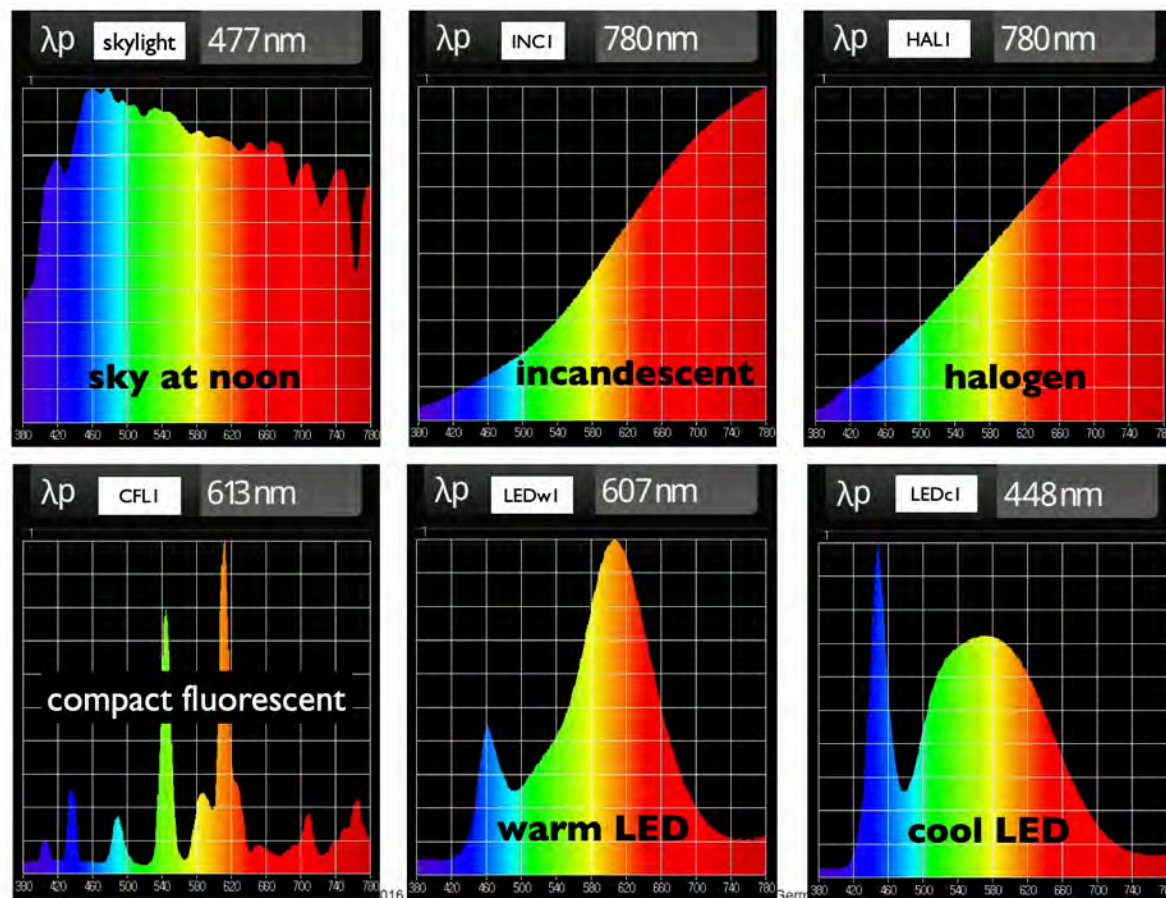


< 50 GS units

5

This is what the visible spectrum looks like from various light sources.

The least natural one is CFLs. NOTE: The blue:red ratio is also important biologically.



6

I was invited to give a talk at a Lighting Conference in Wismar, Germany, in 2016. I asked the conference organizers to send me one of their “best” light bulbs. The light bulb I measured had exceptionally high RFR and it turns out to be a bulb that can be controlled by your cell phone. Levels of RF were similar to WiFi routers!!! Note: the light bulb I purchased in Canada has the same problem.

Problem #1: RFR-LED



constant radiation!

RFR (mW/m²)

0.6
1.2
17

} same company

- elevated RF exposure
- unhealthy
- waste of energy!
- EMI – interference

LSW 2016 • 12-14 October 2016 • Hochschule Wismar • Wismar / Germany

GOVERNMENTS (/CATEGORY/GOVERNMENT)

verizon (/tag/verizon/), cellular networks (/tag/cellularnetworks/), fcc (/tag/fcc/)

LA building's lights interfere with cellular network, FCC says

Stephen Lawson
@sdlawsonmedia

Feb 7, 2014 4:05 PM

When a certain Los Angeles office building lights up, it's a dark day for nearby cellphone users, according to the U.S. Federal Communications Commission.

Fluorescent lights at Ernst & Young Plaza, a 41-story tower near the heart of downtown, emit frequencies that interfere with the Verizon Wireless 700MHz network, the agency said in a citation issued on Friday against building owner Brookfield Office Properties.



The FCC's message comes through loud and clear in the filing: Brookfield could be fined up to US\$16,000 a day if it keeps using the interfering lights, up to a total of \$112,500. The alleged violation could also lead to "criminal sanctions, including imprisonment," the citation says.

Responding to complaints from Verizon, the FCC approached building management last April and was told they were already investigating. The agency said it asked Brookfield to file reports but never got them. Verizon kept

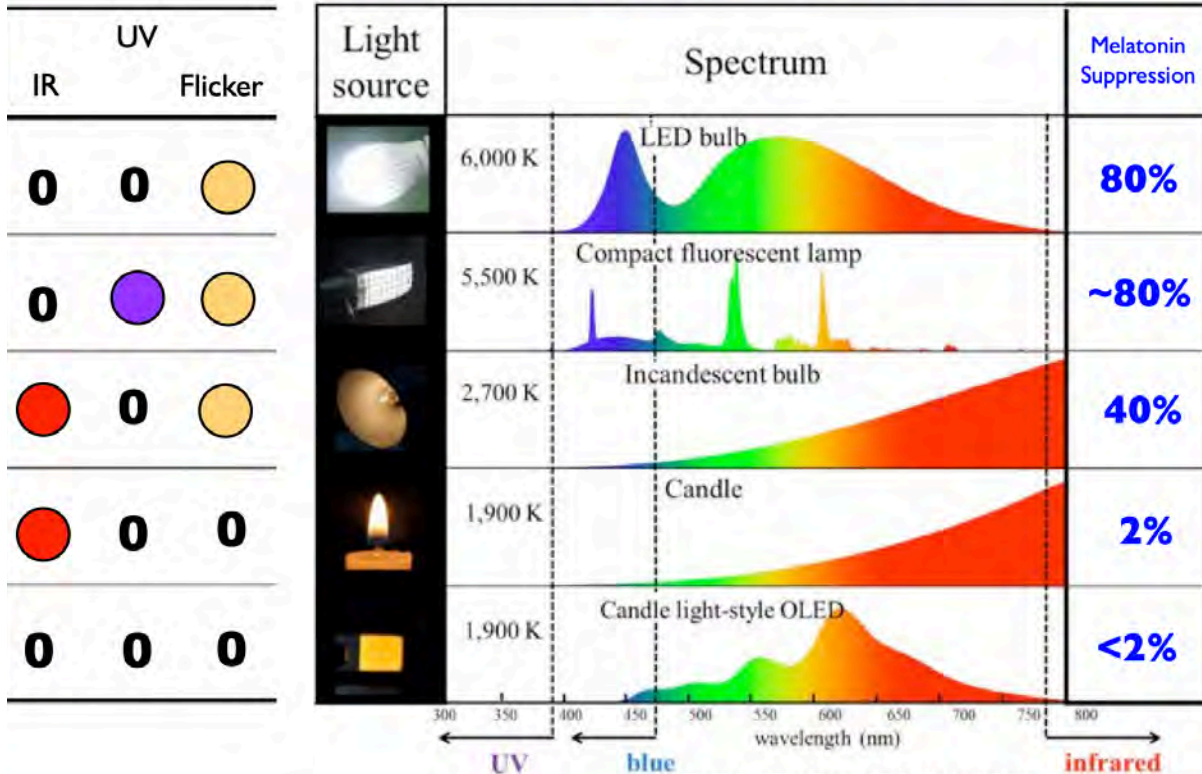
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Spectral distribution of various light sources, infrared (IR), ultraviolet (UV) and light flicker. Note the blue to red ratio is important especially at night. Avoid blue light at night.

Wavelength - Effects

blue light suppresses melatonin



- sleep
- fatigue
- depression (serotonin)
- reproduction (estrogen)
- cancer
- eye problems



This is the Light Noise Detector we used. It comes from Medical Electronics in Germany and is quite costly.

This light noise detector is less expensive and is available at: <https://www.sensora.com/lightbee.html>



Buy Now



\$125CAD shipping included

New improved Mk II version

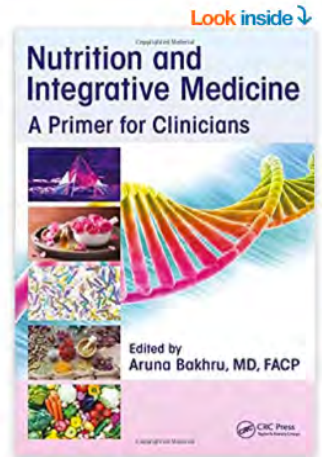
with Distance indicator

8

These are the results we got for 38 light bulbs we tested. We measured background (BG) with all lights off, incandescent (INC); halogen (H), compact fluorescent (CFL) and a large number of light emitting diodes (LED).

9

We have a chapter on light in Aruna Bakhrú's book (available on amazon).



Martel, AA, W Burwell, M Havas. 2018. Chapter 21: Healing with Light, Aruna Bakhrú (Ed.), Nutrition and Integrative Medicine: A Primer for Clinicians, CRC Press. 483–509.

Introduction

Our relationship with light and especially with light from the sun has gone through several cultural transformations. Early civilizations worshipped the sun. Around the time of Hippocrates, sunlight was used for healing (heliotherapy) and was prescribed along with thermal baths and rest. In the middle ages, since peasants worked the fields and aristocracy stayed indoors or was otherwise sheltered from the sun, fair skin was viewed as a sign of wealth and privilege leading to the peaches-and-cream complexion so valued among British maidens. During the industrial revolution, a growing population worked indoors in factories and received little sun exposure while the rich could afford vacations in southern climates. So a tan was associated with wealth and leisure. Today, most people when they think of the sun associate it with skin cancer, which bodes well for the sunscreen industry that encourages people to cover up and get as little direct sun exposure as possible. Similarly our relationship with artificial has gone through several revolutions with the first, and perhaps most profound, being the use of fire which morphed from wood, to animal fat, to kerosene, to candles as the source of fuel. The second revolution came a century ago with Edison's incandescent light bulb. Concern about the fossil fuel reserves and climate change prompted a move towards energy efficiency and several countries banned Edison's light bulb in favor of energy efficient fluorescent lights and light emitting diodes (LED). We are currently witnessing the third revolution of light as a source of energy an information that can be used and deciphered by living cells. Light as a tool for healing (phototherapy) and optimal health and this is what this chapter is about.

<https://www.amazon.ca/Nutrition-Integrative-Medicine-Primer-Clinicians/dp/1498759483>

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38 light bulbs measured at 20 cm

E-field
V/m

M-field
mG

DE
GSU

RFR
µW/m²

Flicker
dB

good

caution

bad

E-field
V/m

M-field
mG

DE
GSU

RFR
µW/m²

Flicker
dB

	E-field	M-field	DE	RFR	Flicker
Background					
BG1	17.4	0.35		0.2	-78.2
BG2	25.0	0.34	37	0.2	-78.5
Incandescent					
INC1	39.3	0.31	38	0.2	-21.2
INC2	45.2	0.30	38	0.2	-19.2
INC3	73.7	0.33	40	0.2	-29.9
Halogen					
HAL1	32.4	0.32	38	0.1	-19.2
Compact Fluorescent					
CFL1	92.1	0.60	98	0.1	-39
CFL2	81.6	0.50	1642	0.2	-24.4
Warm LEDs					
LEDw1	39.3	0.39	39	0.2	-19.7
LEDw2	35.4	0.33	39	0.1	-24.7
LEDw3	67.1	0.36	37	0.1	-20.4
LEDw4	56.7	0.34	40	0.1	-18.8
LEDw5	59.3	0.36	44	0.2	-36.1
LEDw6	35.2	0.31	88	0.2	-32.6
LEDw7	47.8	0.47	134	0.2	-18.4
LEDw8	55.0	0.48	399	0.1	-19.1
LEDw9	55.2	0.97	330	0.1	-19.3
LEDw10	47.9	0.45	2001	0.2	-19.6
LEDw11	48.7	0.74	1262	0.2	-21.4
LEDw12	56.6	0.37	1287	0.2	-26.1
LEDw13	54.1	0.30	1946	0.2	-19.3
LEDw14	68.1	0.37	1985	0.1	-31.6
LEDw15	58.6	0.52	2001	0.2	-18.2
LEDw16	63.0	1.43	1050	0.1	-18.6
Cool LEDs					
LEDc1	47.1	0.30	40	0.2	-52.5
LEDc2	41.5	0.36	114	0.1	-53
LEDc3	61	0.7	364	0.2	-60.1
LEDc4	56.2	0.36	40	0.2	-18.4
LEDc5	55.6	1.06	362	0.2	-19.7
LEDc6	47.7	0.77	1281	0.2	-20.7
LEDc7	60.7	1.28	1182	0.2	-19.2
LEDc8	69.8	0.36	1371	0.1	-17.7
LEDc9	63.8	0.36	1433	0.1	-21.3
LEDc10	48.1	0.39	2001	0.1	-17.8
LEDc11	53.2	0.51	2001	0.2	-19.3
LEDc12	53.5	0.40	2001	0.2	-19.4
LEDc13	60.6	0.34	2001	0.2	-20.6
RF LEDs					
LEDr1	50.6	0.50	177	646	-18.8
LEDr2	61.5	0.50	171	1,165	-19.2
LEDr3	58	0.26	487	16,870	-57.7