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CONSIDER THE ALTERNATIVES

Looking to improve your health, save energy and reduce light pollution for a healthier night sky? Consider the following:

Shut out all light at night. Sleeping in a dark room aids the production of neurotransmitter serotonin, which is crucial in making melatonin.

Utilizing light sources of minimum intensity necessary to accomplish the light's purpose.

Try to get nine hours of sleep. A Finnish study found that women who slept nine hours were one-third as likely to get breast cancer as those who slept seven-eight.

Get outside in the morning. Just 10-15 minutes of morning light will send a strong time-keeping signal to the brain's clock, leaving it less likely to be confused.

Use a timer or occupancy sensor to turn lights off when not needed.

Light areas only when needed and use natural light whenever possible.

Light with energy efficient bulbs such as LED and compact fluorescent.

Evaluate your lighting requirements and match them to fixtures and bulb types that make the most sense.

Install outdoor lighting fixtures that limit the amount of light that escapes upward.

Shine light downwards, using shields and reflectors.

*Our facility. Our Community.
Our World. It's all connected.*



Is life better in the dark?

The electric light has come a long way since it was invented back in the early 1800s. From two wires attached to a battery and a charcoal strip, to today's high tech versions including compact fluorescent and light emitting diodes (LED), there are plenty of choices to satisfy our various needs.

Electric lights allow us to work in safer and more inviting environments, help us see what is in the refrigerator late at night, and provide a means by which health care professionals are able to better conduct diagnostic testing, patient exams and surgeries. After all, who would want their appendix removed by the light of a coal oil lantern?

But with the advent of the life-altering electric light also comes what is referred to as light pollution from sources as varied as illuminated sporting venues, streetlights,

commercial properties and industrial complexes, places of worship, household yards and health care facilities. You may know it also as light clutter, sky glow, or stray light and it is, according to naturalists, environmentalists and medical researchers, one of the fastest growing and most pervasive forms of environmental pollution.

What is worse, there is a growing body of scientific research suggesting that light pollution can have lasting adverse impacts on both human and wildlife health.

Medical research on the effects of excessive light on the human body is revealing evidence of increased incidence of headache and worker fatigue, decreased sexual function, increased anxiety, elevated blood pressure and increased worker errors. Others, such as Professor Steven Lockley of the Harvard Medical School, are studying the link between artificial light at

"Epidemiological studies have shown increased rates of obesity and cancer are associated with decreased nightly reported sleep duration. Intrusive street lighting, as well as wasting money and energy, is likely to have an adverse effect on human health, effects which are entirely avoidable with better planning of urban lighting fixtures."

Short- and long-term measures to reduce light pollution will reduce energy demands, reduce reliance on carbon-based fuels and improve the health of the urban environment.

*Steven Lockley, Ph.D.
Assistant Professor of
Medicine, Harvard
Medical School*



Hey, can you turn down that light?

There is growing concern that light levels in patient rooms, hallways, nursing stations, and straying from adjacent properties could be causing undue harm to patients and health care staff.

The negative effects of improper lighting is now so serious that the American Medical Association has drafted a resolution in support of national and state light pollution and glare reduction efforts, stating that light trespass (or light pollution) has been implicated in the disruption of human and animal circadian rhythm and is strongly suspected as a cause of suppressed melatonin production, depressed immune systems, and increase in cancer rates such as breast cancers.

Canadian health facility operators are responding to these new health concerns in a number of creative ways to reduce any potential human harm and lessen the organization's ecological footprint at the same time.

An easy first step for many has been to decrease the number of bulbs in light fixtures in non-critical areas. Surprisingly it has been discovered that many areas have been over lit for years. This basic 'de-lamping' process saves not only energy but has a potential to positively impact the health of those living and working in the areas. A simple

hand-held light meter can easily be used to determine lighting levels and quality throughout the facility.

"Light levels must not only be adequate by building code standards, they must provide proper illumination for patient care. This is critical in a health care facility!" says Timmins and District Hospital facility manager JJ Arsenault who with his team has recently completed a de-lamping retrofit that resulted in considerable dollar savings available now for reinvestment in patient care.

Swapping out old fluorescent light technology for new T8 and T5 lamps is also having a huge positive impact in areas where little natural light is available. The correct mix of light fixture and electronic ballasts is also serving to improve the power factor and eliminate the flickering fluorescent light effect often associated with headaches and dry itching eyes. Today's new bulbs and tubes also offer a wide variety of emitted light colour variations making it easier to set up rooms with close to natural light, providing much greater colour rendition for patient diagnosis.

Where safe to do so, some lights in facilities may have motion sensors and timers associated with them so that they come on only when needed and turn themselves off when no longer required.

The use of compact fluorescent and halogen task lighting has also improved situations at the nursing station night desk where light is now sufficient to perform needed tasks without being so bright and misdirected as to disrupt patient rest with stray light filtering into their room. Reduced overall power use by modern light fixtures means reduced cooling requirements in facilities through the summer months decreasing further the site's greenhouse gas emissions and energy demand placed on the electricity grid.

New exterior fixtures with improved bulb technology such as LED and with better shielding and reflectors also results in reduced power demand, fewer dollars going to the utility companies and less light pollution to impact neighbouring properties.

The importance of reducing light pollution is also recognized by the Canadian Green Building Council which provides credits towards their environmentally friendly building standard certification program (LEED) for building projects that reduce the amount of stray light they generate.

A simple thing such as changing a wall colour can also further reduce the amount of lighting required and often brings with it an improvement in mood. What colour are you painting your walls?



**LAST
WORD**

"It is impossible to travel faster than the speed of light, and certainly not desirable, as one's hat keeps blowing off."

Woody Allen



a green thread connects everything we do

Healthy living... in the dark



Most Canadians recognize the importance of being more sustainable and are trying to be greener in their daily lives. We are recycling more, consuming less electricity, using refillable drink containers, taking public transit or walking and cycling instead of always driving the car. But how many have actually thought about how our electric lights are polluting the night sky and harming our health and that of someone you love? Have you?

Research is now confirming that excessive light can have a very negative impact upon our health. It can throw our body's natural rhythm out of whack putting some of us at higher risk of breast and colorectal cancer, sleep disruption and insomnia, depression, mood disorders, and cardiovascular disease. Some refer to this as artificial light-induced disease.

There is also evidence to support claims of ecological damage due to light pollution which can impact both flora and fauna. Prolonged exposure to natural light may prevent some trees from adjusting to seasonal variations claims Winslow Briggs in the book "Ecological Consequences of Artificial Night Lighting."

The Encyclopedia of Earth website also states that "research on insects, turtles, birds, fish, reptiles, and other wildlife species shows that light pollution can alter behaviors, foraging areas, and breeding cycles, and not just in urban centers but in rural areas as well."

So what are we going to do to help reduce our contribution to light pollution? Start by something as simple as shutting off all the unneeded lights in your house or apartment. Do you really need that hall light on all night 'just in case'

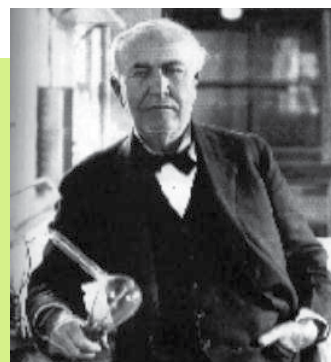
someone has to get up and go to the bathroom at 4:00 AM? What about using a small LED night light instead?

Properly sized and directed table, desk and floor lamps are also a worthwhile consideration rather than lighting your personal space with a harsh overhead light.

Compact fluorescent (CFL) and the new LED bulbs are a great way to save energy and come in a variety of nifty modern fixture designs. You can dress up the house, save money and reduce pollution at the same time. Win-Win-Win!

What about installing a motion sensor or timer on your outside lights? And make sure that the light they generate is aimed where it is needed and doesn't stray onto your neighbour's house. Reduce the wattage of all bulbs to the minimum needed for safety.

You may also want to encourage your neighbours to aim their lights carefully and engage them in a friendly discussion about the problems of artificial light pollution and how it is causing negative health impacts in thousands of Canadians. Consider also requesting local government officials install proper reflectors and down casters on street lamps under their control and to enact laws that would protect the sky and prevent light from being directed where it isn't needed. You may find a visit to the website of the British Astronomical Association's Campaign for Dark Skies useful at www.britastro.org/dark-skies. Remember, the power to do something about light pollution is in your hands.



"I never perfected an invention that I did not think about in terms of the service it might give others... I find out what the world needs, then I proceed to invent...."

Thomas Edison

night and breast cancer and according to Lockley, "there is good epidemiological evidence that female shift-workers, who are often exposed to light at night when their melatonin production occurs, have higher rates of breast cancer than non-shift working women."

Even dim levels of light can negatively disrupt sleep, particularly "those whose bedrooms might be in close proximity to streetlights" fostering the belief that "even if these effects are relatively small from night-to-night, continuous chronic sleep and



hormonal disruption may possibly have longer-term health risks.

So tonight before your head hits the pillow, remember to close the drapes, turn off the bathroom light, and cover up any light coming from electronic devices in your room. Good night and good health!

Resources:
International Dark-Sky Association – www.darksky.org
State Environmental Resource Centre – www.serconline.org/darkSkies.html

Advantages of Compact Fluorescent Light Bulbs

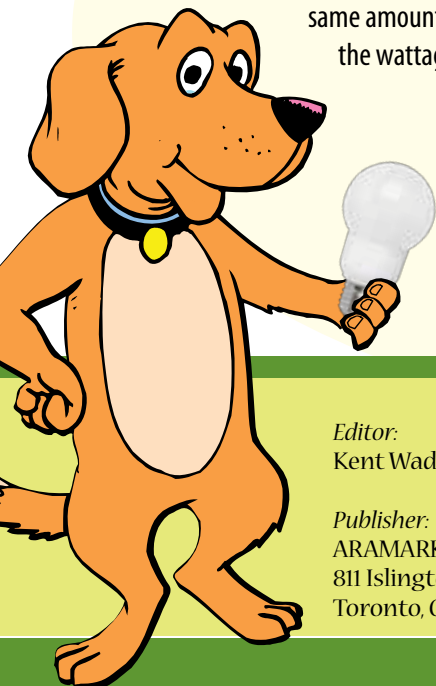
1. Less Energy Usage CFLs use up to 80 percent less energy than incandescent bulbs yet produce the same amount of light with one fifth of the wattage.

2. Longer Life CFLs can last up to 10 times longer than incandescent bulbs; the electronic ballasts have a longer life than any filament available in an incandescent bulb.

4. More Natural Lighting Newer CFLs produce a more natural lighting than older CFLs and incandescent bulbs. Full-spectrum CFLs produce light that is similar to that of natural sunlight.

5. Produce Less Heat Incandescent bulbs are inefficient; up to 95 percent of the energy used produces heat, not light. CFLs produce little to no heat, making them not only more efficient, but safer to handle.

3. Saves Money Because CFLs use less energy, they can save you money on your electricity bill. Each CFL that replaces an incandescent can save \$30 to \$45 over its lifetime, which more than pays for the up-front costs of CFLs.



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