

Let's stand up and say:
**Light at Night
is a Pollutant**

presented by Jan Hollan

from

CzechGlobe – Global Change Research Centre (of Acad.
Sci. Czech Rep.)

AdMaS - Advanced Materials, Structures and Technologies
Centre of the Brno University of Technology

and

Department of Preventive Medicine, Masaryk University, Brno

Pollution: what's that?

- centuries ago: religious notion only
-
- 60's: toxic additives to the environment
-
- now, a *technical term*, take it calmly:
 - Alteration of the Natural State
 - due to Human Activity
-
- – if harmful to us or other beings,
- that might be difficult to find

chemical example

- Low level exposure to arsenic in drinking water **may pose cancer risk**
-
- Long-term, low level exposure to arsenic in drinking water may increase a person's risk of skin cancer, according to a new study conducted in Hungary, Romania and Slovakia. The study suggests that **levels of inorganic arsenic previously thought to be harmless** may have a carcinogenic effect over a longer period of time.

example of Noise / Sound

- Sound pollution?
-
- (sound: OK, good, healthy, reasonable...)
-
- Therefore: Noise pollution.
- Or: Acoustic pollution

Which sound is **no pollutant**?

That of **natural origin**

- If the natural background is very silent, even a small amount of acoustic energy added by people is regarded as very polluting.
-
- If the man-made sound adds just 0.5 dB to the natural background, with no discernible spectral difference, we cease to notice such minor pollution (0.5 dB is 12 %). It is **tolerable**...

Want to Sleep Well?

- Darkness and silence are a must

Light as a pollutant

- **Light** pollution – no **heavy** issue?

Darkness: a basic attribute of night

-
- Darkness, what's that?
-
- Less light than short ago
 - or in adjacent area
- Common in daytime too...
-
- No light: just totally enclosed spaces

Darkness wanted

- for rest
- contemplation or prayer
- storytelling
- privacy
- and for the nature, of course

Reasons for lighting

- people out of nature don't like darkness, even adults
- darkness is full of ghosts
- today, no ghosts, but: murderers, robbers...
- seeing your way makes walking or riding easier
- but **no crime reduction**, on the contrary...

The first awareness that a problem exists – the 60's

some astronomers

- before the discharge lamps began to replace old bulbs and before the superstition “everything is to be lit” became common

but:

Squires WA, Hanson HE. 1918. The destruction of birds at the lighthouses on the coast of California. Condor 20: 6–10.

Life in nature

- most animals active at night
- darkness is the basic protection
- alteration of light environment is fatal for them
 -
 - The points or areas of super-high luminance are the worst,
 - but
- even the mere absence of natural darkness is a problem

Light is a serious pollutant

- **Photopollution:**
 - degradation of photic habitat
 - by artificial light
 - (Verheijen, 1985)
- **Darkness is a biological imperative**
- **Scotobiology**

Pollution of the environment by man-made light

still increases, quickly

The rise should be stopped and
reversed, so that we get to a
sustainable course

Similar to fossil carbon emissions

Both pollutants considered harmless 40 years ago,

both are very harmful.

Solution:

don't waste so much, be careful
the less, the better

Light regarded as Dirt – a blasphemy?

- Isn't light the very symbol of goodness?
-
- Of course... but a false one
- **Natural variation of day and night is the real blessing**
-
- Compromising a true night by artificial lighting is pollution, albeit inevitable in some cases in some amount; **all outdoor lighting is polluting**

We should accept this fact... and adhere to any of compatible definitions of LP

- (as listed with references [in Wikipedia](#)):
- Degradation of photic habitat by artificial light.
- Alteration of natural light levels in the outdoor environment owing to artificial light sources.
- **Alteration of light levels in the outdoor environment (from those present naturally) due to man-made sources of light.** Indoor light pollution is such alteration of light levels in the indoor environment due to sources of light, which compromises human health.
- **The introduction by humans, directly or indirectly, of artificial light into the environment.**

Let us declare

We urge the IDA and all relevant institutions to adopt a scientific definition of Light Pollution. Light added artificially outdoors at night is a serious pollutant

-
-
- (Why? The old attitude, 'defining' LP like a list of consequences, prevents standard mechanisms of combating pollution, like those used by EPA.)

Let's inspire by

- World experts **shed light** on the extent of dangers of night-time artificial lighting:
- 'The most important thing for us is to raise awareness of the dangers of artificial light at night...' (prof. Abraham Haim, September 2012)
- (see also University of Haifa **press release**)

And say some concrete advice like

We urge all legislative bodies to **allow no light going horizontally or upwards from outdoor lighting**. Any arguments against it have been proven false by science long ago and by the excellent experience from countries with such legislation: Slovenia and most of Italian provinces.

And we recommend to **switch off the lights or at least dim them 3x or more when there are no or almost no users of them**.

We stress that any surfaces with luminances 10x or more strong than the road luminance, if in the field of view, are denying the purpose of outdoor lighting, are uncomfortable for people and dangerous to traffic. This concerns advertising and building illumination, among others.

We feel that having artificial window illuminance of windows from outside at night lower than 0.2 lx is a basic human right.

If we will say so, the outside world might pay attention

-
- Please think about it today, and, at the end, raise your hands in support of these simple, basic demands which might
 - change the game
 -
- Thank you for your involvement