



The Light Pollution Definition, Causes and Recommendations to Moderate Light Pollution

Rekha Jawale^{1*}, Prakash Bhadane², Suhas Sabnis³

^{1,2,3} Saraswati College of Engineering, Mumbai University, Kharghar, INDIA

* Correspondence: E-mail: rekha.jawale@yahoo.com

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ABSTRACT: Pollution causes many behavioral, health and mental issues. The objective of this paper is mainly to study concept of light pollution and their recommendations that can be implemented to reduce the light pollution and make the life of people full of gaiety. The main cradles of light pollution are presence of glare, clutters etc. the study reveals that the light pollution affects animal's sleep, their behavior and also affects the growth of plants which is of major concern. It is also believed that lights on street, house lights attract to insects towards it. Many lights at night are not in proper directions, improper intensities etc., that affects the night view of stars and haults the study of astrology. There is need to minimize such kind of pollution. Few recommendations are mentioned in this paper to reduce this pollution.

Keywords: Pollution; over-illumination; Light trespass; Glare; Sky glow; human health and animal behavior.

INTRODUCTION: Do you live in the city? If so, what do you see when you look up at the sky at night? Sadly, for most people, is they don't. This unwanted extra light from artificial sources is referred to as light pollution. Light pollution subsists in four different forms. 1. Glare. 2. Sky glow. 3. Light trespass 4. Clutter. Light pollution is unwarranted, misapplied or inappropriate out-door lighting. Too much of light pollution rinses out view of the Universe, result in surge in the energy consumption, interferes with astronomical research, interrupts ecosystems, disturbs the health and safety of humans and wildlife. When most people chat about light pollution they are speaking of all the way that natural light has been changed by manmade light. It can even affect weather in some cases. The natural world is set to respond to the sun's patterns of lighting this paper we are going to present some recommendations to stop the light pollution.

LIGHT POLLUTION DEFINATION AND TYPES: Any adverse effect of artificial light including sky glow, glare, light trespass, light clutter, decreased perceptibility at night, and energy unused. Light pollution is not only a hindrance to astronomy, but it also affects us unswervingly.

sky glow: Sky glow (or sky glow) is the diffuse luminance of the night sky, apart from discrete light sources such as the Moon and visible individual stars. Sky glow occurs when artificial light shines upwards, reflects off clouds and atmospheric particles such as dust and water, causing a 'scattering' effect. It can be

produced by any artificial lighting such as street lamps, flood lights, security lighting, illuminated buildings, lights left on in office buildings at night, airport landing lights and so on.

Glare: Glare is often the effect of unnecessary contrast between bright and dark areas. Glare is mainly a subject in road safety, as bright shielded lights around roads may partially blind drivers or pedestrians unexpectedly, and contributes to accidents. Disability glare is the reduction in visibility caused by intense light sources in the field of view, while discomfort glare is the sensation of annoyance or even pain induced by overly bright sources.

Light trespass: Light invade occurs when unwanted light enters one's property. Many of us have experienced this situation: a neighbor installs a fresh light on their possessions. It's an unshielded fitting that casts a bright light that falls onto your possessions and possibly even inside your home. This is known as light trespass and it can cause a lot of pain.

Clutter: Light clutter states to too much group-ings of lights. Groupings of lights may create confusion, distract from problems and potentially cause accidents.

Causes of Light Pollution: Light pollution is exclusive as it is produced by man only. There is no similar natural form of the pollution like carbon dioxide. The main causes of light pollution are:

Poor Planning: The location of signage and street lights is strategizing by engineers, if they do not take

into account the effect location has on the surrounding environment they can generate glare, light trespass and light clutter.

24-hour culture: People are becoming more and more familiar to restaurants, bars, shops, entertainment and transport networks being existing right round the clock – this results in businesses staying up 24*7. The effect is snowballing: when one business stays open 24 hours, other businesses often feel that they must follow suit in order to strive for profits.

Brighter bulbs: As bulbs get brighter, the total of light pollution that they root increases. Light bulbs should be used for illumination, but we have got too much used to over illumination.

Overpopulation: That is truly a zoning problem. Too many businesses, or too many houses, grouped in one area can cause light pollution of many kinds.

Street lighting: Street lighting is a safety essential in many areas of the world. These lights help to keep us safe. However, they also create artificial light at night. When super bright street lights are used, they can substantially contribute to light pollution. Light pollution is measured by a scale known as the Bortle Scale, which measures the sky's brightness.

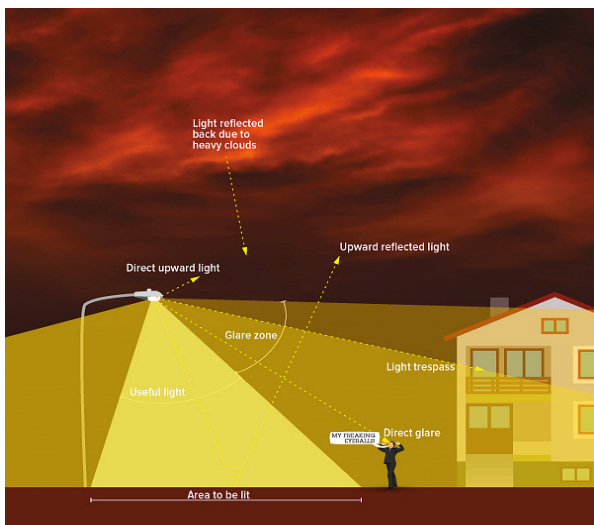


Figure 1: Light pollution diagram.

Effects of light pollution:

Animals: Lights can draw or prevent animals and insects. Most animal life purposes on a daylight or nocturnal system that is thrown out of sync by light pollution. This can place total of species in danger, or attract undesirable species into human areas.

The Earth: The Earth's ecosystem is reliant on cycles of natural light. Sky Glow alone can cause a loss in progressive protection as the reflected light off the atmosphere will prevent the natural UV rays from reaching the Earth. This disturbs growth and falling-

off cycles that our food, air and water supply is reliant on.

Loss of touch with the ordinary tempos of life. When we live in a 24 hour culture, with the skies brightly lit all the time, we lose touch with the ordinary tempos of life where periods of breather and darkness are zig-zagged with periods of action. Instead, we are encouraged to be active all the time. This can end result in us feeling uneasy, taxing and over worked. It is hard to get the rest and tranquility that we need when everyone else is working.



Figure 2: Effects of light pollution.

RECOMMENDATIONS ON DECREASING LIGHT POLLUTION: To decrease the light pollution here are some recommendations that can be implemented to make the world better place again. Decreasing light pollution suggests many things, such as decreasing sky glow, decreasing glare, decreasing light trespass, and decreasing clutter

Ensure bulbs are enclosed and lighting facades downwards: Good street lighting should feature a bulb which is covered above and to the flanks. This passages light downwards – where it is needed and reduces the amount of wasted light. Known as 'cutting off light at the horizontal', this ensures that light is used to lighten the ground, not the sky.

Check with your power company to see if you're paying for outdoor lighting: Lots of utilities charge \$5 to \$10 a month for this facility. A rapid check of your bill or a call to Customer Service will convey the story. If this turns out to be the case, dismiss the charge and ask that the light be aloof. Most power companies are happy to gratify.

Replace orthodox high-energy bulbs with effective outdoor CFLs and LED floodlights: While efficacy lighting won't unswervingly keep all those urchin lumens from full of life around, it will take some of the tingle out of your monthly bill and reduce power company carbon emissions. Just don't fall into the

ploy of thinking that CFLs and LEDs are a green light to be careless about switching things off. While you're at it, see whether low-wattage, solar powered lamps might replace area lighting. They're cheap and almost free to activate.

Cogitate swapping outdoor lights with intelligently designed, low-glare fixtures: The International Dark-Sky Association weighs fixtures for low glare and effectiveness. Look for the IDA seal of approval on locally sourced fixtures, or seek out a company, which specializes in low-pollution lighting. They also keep a blog on light pollution.

Decreasing air pollution: Light pollution is significantly deteriorated by the attendance of dust and polluting gases in the air, as these can be lit up by the city underneath and found fiery glow in the air. Reducing the amount of fumes, sprays and so on that we announce into the air will thus assist in our fight against light pollution.

Place motion sensors on vital outdoor lamps: Lighting on demand undermines a manual switch or timer. Motion sensitive switches will light up porches and walkways when you need to move everywhere after dark. They'll pay for themselves in justly tiny order.

Be an Betrothed Citizen by Embargoing Light Clutter: This is which is the extreme group of lighting, especially illuminated billboards and lit-up market instituting by telling companies why you don't decide with what they're doing, that it can be hazardous, making situations that lessen from highway safety, muddle the landscape and surplus energy, and inform the company or business you're accepting more eco-friendly participants until they make changes!

Use less decorative lighting: Festival seasons guzzle a lot of lighting. Many people keep the perky lighting on throughout the day and night. The use of such ornate lighting should be lessened. Instead, the use of candles and 'diyas' should be promoted, especially during the festive season.

CONCLUSION: Light pollution is becoming an growing problem in our modern urbanized civilization and must be dealt with. First, all roadway lighting systems should be required to use efficient, full-cutoff luminaires to control the light output. This will not only decrease the level of light pollution but will also

save energy and produce a more aesthetic and pleasing environment. Research in this subject is ongoing in many areas but there is still ample to be done. There should be collaboration between physical scientists, medical experts, engineers, biologists and ecologists. Survey Government license is required for fitting video billboards.

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