

## **Light Pollution...**

is harmful to our planet and all living things. It can be reduced if you help. Please share your knowledge to help educate others!

### **Light Pollution - 3 Types:**

**Sky Glow** - Artificial light traveling outwards and upwards causing the sky to light up or glow by striking dust particles and droplets of moisture in the air.

**Glare** - Artificial light going outwards from the light bulb that may be an annoyance or even harm your vision by shining in your eyes which could cause safety problems.

**Light Trespass** - Artificial light that travels from one property onto the next property.

8/30/10

## **Some Light Bulb Facts...**

About 85% of the energy used by an incandescent light bulb goes to heat, only 15% for light. This is a huge waste of electricity and water to generate the electricity and it adds to air pollution.

A typical 60 watt incandescent light bulb puts out about 830 lumens of light, a 14 watt compact fluorescent lamp (cfl) puts out the same amount of light but uses 75% less energy and should last 5 times longer.

### **For More Information**

Contact the Southern Arizona Chapter of the International DarkSky Association see our web [www.sa-ida.org](http://www.sa-ida.org)

For materials or special presentations email us at [joe@sa-ida.org](mailto:joe@sa-ida.org)

# ?'s

## About

## Outdoor Lights



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## **Questions and Discussion Topics about Outdoor Lighting...**

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- 1) What is Light Pollution? How does it happen?
- 2) Who Contributes to Light Pollution? Why do they?
- 3) Who can help reduce Light Pollution? Is it expensive to help?
- 4) How Does Outdoor Lighting Effect:
  - Wildlife?
  - Plant Life?
  - Human Health?
  - Astronomy?
  - Safety?
  - Energy Consumption?
  - Air Quality?
  - Archaeology?
- 5) What is Responsible Outdoor Lighting?
- 6) What Light Pollution and Energy Saving Solutions can you think of and help with?

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**ED-09 Note:** This brochure is set up to be printed double sided so you can cut the page in half, across the page, and end up with two small brochures. Do a letter type tri-fold so the front opens to the left. The back page on the outside has the "For More Information" part showing. Colored paper makes it look nice.

**Answers to Questions** (there are other good answers as well, this is just a few highlights)

**1) What is Light Pollution?** (It is defined in the brochure)

**How does it happen?** Some people design very poor light fixtures and many people buy them. Many outdoor lights are on when not needed (some are dusk to dawn controlled) which adds a lot to the light pollution problem.

**2) Who Contributes to Light Pollution?** Almost everyone who turns on an outdoor light. Some lights are much worse than others, some add very little at all. Some light is often reflected off the ground into the sky.

**Why do they?** Many people have never heard of thought about light pollution. Many do not understand the problems they create by polluting, some just don't care or think it is not important to reduce light pollution.

**3) Who can help reduce Light Pollution?** Everyone needs to help, every day.

**Is it expensive to help?** No, most of the solution is about education, knowing what to do and not do. Expenses do occur when a poor light fixture needs to be replaced with a good non-polluting fixture.

**4) How Does Outdoor Lighting Effect:**

- **Wildlife?** Many animals are active at night (nocturnal). Lights make it more like daytime which can harm their hunting, health, mating, survival and other necessary functions. Migrating birds can get lost with too much light at night. Birds do not roost in trees with light on them. Outdoor lights often attract insects and bugs which then attract bats and lizards, then attracts snakes and owls, etc. This upsets the whole cycle.

- **Plant Life?** Many plants need dark nights for healthy blooms, like the poinsettia.

- **Human Health?** Dark sleep is very important for your body to stay healthy. Lights on at night can interfere with your body clock, making you grouchy and tired the next day. You need regular dark sleep every night to reset your body clock and to generate melatonin, a chemical needed to help fight disease.

- **Astronomy?** Astronomers must have dark skies to be able to see the stars and planets. Our astronomy and optics business in southern Arizona gives jobs to hundreds of people and brings in millions of dollars each year. Everyone likes to see and enjoy the heavens from their home, not having to drive to the country.

- **Safety?** Glare can blind you while walking or driving and cause an accident. Poor lighting often causes shadows giving a place for criminals to hide. Just because there are lights, does not mean it is a safe area.

- **Energy Consumption?** Having poor lights means you are not shining the light on the ground where it needs to be and hence wasting a lot of light going other places. All light requires energy to create it, not controlling the light means wasted light/wasted energy and most likely creating excessive light pollution.

- **Air Quality?** Looking at the "United States at Night" map, you can see lots of white areas which is light shining upwards that the satellites have photographed. It is estimated this is \$5 million dollars of wasted electricity every night. This is about 50 million kilowatt hours which is tons of unneeded air pollution and millions of gallons of water from the electricity generated each night for this wasted light.

- **Archaeology?** The oldest information about our universe comes to us in the form of light. Outdoor light pollution can wash this information away so it can not be viewed or recorded.

**5) What is Responsible Outdoor Lighting?** Responsible lighting is using a good light fixture (one that creates very little light pollution when installed properly), controlling the light downward and only where needed, using the right amount of light, using an energy efficient lamp, and turning it on only when needed.

**6) What Light Pollution and Energy Saving Solutions can you think of and help with?** Adjust existing outdoor lights to shine downward. Use motion sensors to turn them on and off, not photo-cells for dusk to dawn. Do not use poor light fixtures, keep them off and replace them if possible, encourage others to do the same. Change out incandescent lamps to the energy efficient compact fluorescent lamps (CFLs save 75% energy and last longer). Do a science project to collect data and discover more about light pollution and its effects. Share your knowledge with others so they can help too. Encourage businesses, schools, your parents, neighbors and others to review their outdoor lights (look at them from your neighbors house) and make improvements.

**Remember,** Light Pollution wastes money, can hurt our health, our jobs, our safety, our plants and wildlife.