

01/03/2008

EPA's 2007 Report on the Environment: Highlights of National Trends
<http://www.epa.gov/indicators/docs/roe-hd-draft-08-2007.pdf>

I see no reference to "light pollution." This is an issue facing all levels of government worldwide. Much is being done and much more could and should be done.

"Light Pollution" was raised during public on the Hudson River PCBs Superfund Site in 2004. Unfortunately, the EPA's reponse was one of avoidance rather than addressing the concern in a constructive manner. Let's face it, who's hand is on the light switch and who is the victim?

Today light pollution is recognized as being much more than just washing out a view of the stars in the night sky or unwanted light in the bedroom window. It is part of the energy problem, the sustainable environment problem, and the global warming problem.

Use it [light] wisely!

Steve Davis, w2sgd@juno.com
Dark Skies for the Adirondacks
A Natural Resource Worth Saving
<http://www.timesunion.com/communities/darksky>

01/03/2008

Ms. Altieri,

I have reviewed EPA's 2007 Report on the Environment: Highlights of National Trends, Peer Review and Public Comment Draft August 2007, as obtained from <http://www.epa.gov/indicators/docs/roe-hd-draft-08-2007.pdf> This is basically a public summary document that presents the EPA purview and it's recent progress. I believe that we should consider that it is also in part, an educational document.

As we are still within the Public Comment period, I would like to suggest that the issue of Light Pollution be addressed in this document. If this is not practical, then certainly the topic deserves attention in future such documents. Light pollution should be mentioned within the subsection on Greenhouse Gases (p.8) as pertaining to energy conservation; within the Human Health section beginning on p.25 as pertaining to sleepiness, melatonin production and other health effects as well as to accident rates and security considerations; and in the subsections on Biological Diversity (p.30) and Ecological Processes (p. 31) because of the significant effects on twilight and nighttime activity patterns, tortoise extinction, bird strikes (on illuminated buildings) etc. It should also be included in the List of Indicators (p.35).

I appreciate the difficulty in introducing Light Pollution as a newly-appreciated form of pollution that deserves attention. Nevertheless, the deleterious effects of Light Pollution are widely felt and reflected in many Environment Indicators, in energy conservation, and in ecosystem change. Light Pollution has been insidious in its growth yet unappreciated for so long that suddenly mentioning it as worthy of attention requires a bit of education. This educational process must begin somewhere, and the subject document is a good place.

I'll be happy to discuss this with you or to look further into how we might bring this issue to regulatory attention.

Sincerely,

David E. Fields, Ph.D.
Observatory Director
Tamke-Allan Observatory
Roane State Community College
276 Patton Lane
Harriman TN 37748

www.roanestate.edu/obs
www.SaveRoaneStarrySkies.org

Dear National Advisory Council for Environmental Policy & Technology (NACEPT),

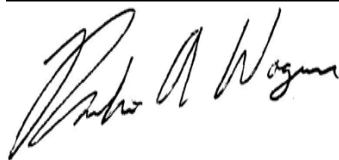
I would like to talk with you briefly about the problem of light pollution in our Federal Class 1 Areas. The EPA in its October 1979, *Protecting Visibility: An EPA Report to Congress* first mentioned the problem of increased night sky brightness. Subsequent documents such as the *1982 Air Quality Criteria for Particulate Matter and Sulfur Oxides Volume III* and the *1995 Air Quality Criteria for Particulate Matter II of III* review draft also included this language. Unfortunately, it appears that the increased night sky brightness was attributed more to particulate matter than artificial lighting. As national particulate matter levels have declined, the night sky brightness has continued to increase.

Based on 1997 numbers, we have found that over half of the 149 Class 1 Federal Areas analyzed have moderate to severe light pollution problems. One-quarter of these areas have a night sky brightness so severe you can no longer see the Milky Way. Current forecasts by the National Park Service show there will be no place left in the lower 48 states with an unpolluted night sky by 2025.

Currently, the light pollution credit in the LEED Rating System is optional and the Energy Star Program Residential Outdoor Lighting Fixture standards do nothing to discourage shining lights into the sky. Increases in lighting efficiency have historically led to more light shining into the sky and increased night sky brightness. Although bound by the Clean Air Act's "no man-made impairment" by 2064, current programs and regulations within the EPA have not led to an improvement in the night sky brightness.

Programs such as the proposed Missouri Night Sky Protection Act offer us the ability to recognize the emission of man-made light into the skies of our protected areas is a problem and must be reduced. By treating man-made light as a nighttime visibility impairment we can work toward understanding how it can be managed. Armed with that knowledge, we can develop regulations that reduce that amount of lighting emitted into the nighttime sky above our Class 1 Federal Areas while promoting safety, conserving energy, and preserving the environment.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert A. Wagner". The signature is written in a cursive style with a horizontal line underneath it.

Robert Wagner
9005 N Chatham Avenue
Kansas City, MO 64154
Missouri Night Sky Protection Act Homepage:
<http://missourinspa.googlepages.com/>

01/04/2008

Sonia,

Thank you for the opportunity for comment. The EPA is pursuing a laudable goal in its Report on the Environment— summarizing the key elements of ecosystem health, environmental condition, and human health. However I point out one facet of the environment that is only briefly mentioned and deserves much more attention— that of light pollution. If not incorporated in the 2007 report, it should be critically examined by the NACEPT for successive reports.

Light is mentioned on page 32, “Physical attributes of ecological systems include air temperature, light, rainfall, and sea level.” However, no further mention is made nor is the connection made between altered light regimes and artificial lighting. Even briefly giving an example on this page would be a worthwhile; something to the effect of “For example, artificial light at night can alter habitat necessary for nocturnal wildlife.” I present several reasons below why this issue should be taken more seriously by the EPA and adopted as an Indicator:

- From space, the illuminated cities of the world are perhaps the first human caused environmental change one would notice. The atmosphere around cities is often lit up 2-3 orders of magnitude brighter than natural night conditions.
- Visible spectrum light is often dismissed as a potential pollutant or human environmental change, however it shares many characteristics of other key indicators that are accepted. Carbon dioxide is a naturally occurring molecule, yet changes to its concentration are considered alarming. Ultraviolet radiation, like visible light, is part of the electromagnetic spectrum, but is of concern linked to ozone depletion. And although temperature varies spatially, seasonally, and daily throughout the world, the retention of infrared radiation is currently the hottest topic in environmental news. Despite the fact that visible light is altered by human invention several fold across broad areas of the country, it receives no attention from the EPA.
- The Fatal Light Awareness Program estimates millions of migrating birds are killed each year due to disorientation by artificial lights. Many of these are listed species.
- There is a growing body of science indicating that artificial light affects a multitude of species. A sampling of these studies has been collected in Ecological Consequences of Artificial Night Lighting, by Rich and Longcore. This is particularly important considering half of terrestrial species are nocturnal and depend on darkness as a physical attribute of habitat.
- The visibility of stars is not only a scientific resource, but is important to many Americans. Natural night skies can be interpreted as an Air Quality Related Value under the 1977 Clean Air Act Amendments. Light pollution hinders nighttime visibility via scattered light which results in a loss in contrast. This is similar to how daytime visibility is affected by aerosols- a physical process addressed in the Clean Air Act.
- Artificial light at night can influence human circadian rhythms just as diminished light during the day can. Recent studies have linked altered photonic environments to breast cancer.
- The fraction of artificial light that causes light pollution represents a significant waste of energy, amounting to roughly 1% of total US electrical consumption.

Measurement of the brightness of the night sky is suitable as an Indicator given your criteria. It has been measured from satellites and observatories for decades, and more recently by portable ground based instruments. Methods have been peer reviewed and published, are in use by government agencies (namely NOAA, National Park Service, and NASA sponsored observatories), used by citizens and NGOs, and there is now adequate data to show trend over time. These measurements are transferable and standardized, and rather straightforward. The EPA's lack of involvement in developing measurement standards should not hinder its acceptance by that agency for the purpose of understanding key elements of our changing planet.

Further information can be found at www.darksky.org, or www2.nature.nps.gov/air/lightscapes.

Sincerely,

Chad Moore
MS. Earth Science
Board of Directors— International Dark-sky Association

International Dark-Sky Association

since 1988

"... to preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting."

January 4, 2008

U.S. Environmental Protection Agency
Administrator Steven Johnson
Ariel Ross Building
1200 Pennsylvania Avenue NW
Washington, DC 20460

Dear Mr. Johnson:

I am writing to you on behalf of the International Dark-Sky Association with thousands of members in the USA and around the world. We are deeply concerned about the problems of excessive outdoor lighting and the adverse effects of light pollution. We ask for your help in addressing this problem.

Based on our calculations, we estimate that several billion dollars are wasted each year in the USA due to over-lighting the night. We estimate that about 38 million tons of carbon dioxide are generated by this wasteful practice.

Poor quality nighttime lighting is the main cause of this problem. Such obtrusive lighting causes blinding glare and light trespass. It reduces visibility, rather than enhancing our nighttime environment. Glare, for example, is a particular problem for our country's aging population. In addition, we are denied access to the beauty of our night skies; which for generations has influenced much of the world's science, literature, art, and music.

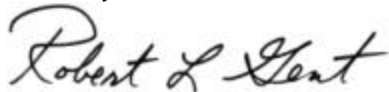
In addition to these problems, wildlife can be harmed by excessive lighting. Migrating birds become disoriented, and sea turtles (all species of which are threatened or endangered) are losing nesting areas due to brightly lit beaches. In addition, recent research has shown a link with melatonin suppression and human health. Lights at night stop humans from producing melatonin, which disrupts our circadian rhythm. Melatonin suppressed blood has been shown to cause increased cancer growth rates in laboratory animals. In fact, the World Health Organization has just listed "shift work" to its list of possible carcinogens.

By promoting responsible outdoor lighting, we can reduce energy waste, control glare, stop most of the obtrusive light trespass, improve visibility and safety, protect biodiversity, live healthier, and preserve the beauty of our night skies. By controlling energy waste, we can save billions of dollars and reduce atmospheric pollution. We believe that solutions are simple, and that everyone, including the public, benefits from these solutions. Currently, more than 20 states have passed or are considering various outdoor lighting bills to control excessive outdoor lighting. It is time that this issue sees national attention.

We encourage you to consider the environmental, safety, and health effects of light pollution as an EPA recognized pollutant. Thus including light pollution in education, outreach, and grant programs.

IDA is ready and willing to assist with this process. Please let us know if we can be of any assistance.

Sincerely,



Robert L. Gent, Lt. Col. Ret. USAF
President, Board of Directors

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David L. Crawford, Ph.D.

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Christopher W. Walker
Walker & Company
Reston, VA

Reginald Wilson
Lighting Analysis & Design
Sydney, Australia

NATIONAL PARKS CONSERVATION ASSOCIATION

Protecting Our National Parks for Future Generations

January 4, 2008

**Re: National Advisory Council for Environmental Policy and Technology (NACEPT)
[FRL-8510-1]**

Dear Members of the NACEPT,

On behalf of our more than 335,000 members, the National Parks Conservation Association (NPCA) thanks you for the opportunity to briefly discuss our concern for the lack of progress the EPA has made in considering the role of air pollution in magnifying light pollution and thereby reducing night time visibility of the stars in our national parks. Since 1919, NPCA has been the leading voice of the American people in protecting and enhancing our National Park System.

Our national parks are some of the best last places that Americans have left to have the opportunity to be inspired by shooting stars, fascinating constellations, and rare once in a life time natural phenomenon, such as viewing Haley's Comet that can only be seen every 76 years. Sadly, the National Park Service predicts that there will be no place left in the lower 48 states with unpolluted night sky by 2025. Furthermore, the National Park Service has found that light from distant cities affect night skies over 200 miles away and that almost all national parks have noticeable light pollution.

One of greatest threats to our night skies is air pollution. According the National Park Service, *"Air pollution particles...increase the scattering of light at night, just as it impacts visibility in the daytime."* Congress passed the Clean Air Act in 1977 with the goal of preventing and reversing the impairment of visibility of Class 1 federal areas, which include forty-six national parks. While some progress has been made in addressing the role of air pollution in obscuring daytime visibility in the parks, the EPA has done very little to consider the effects of air pollution in viewing the night sky. This is despite the definition provided in the CAA stating that the terms "visibility impairment" or "impairment of visibility" shall include a "reduction in visual range and atmospheric discoloration." (42 U.S.C. 7491)(g)(6)

NPCA believes that the Congress intended that the class 1 visibility goals outlined in the CAA where intended for both daytime and nighttime visibility. We ask that you encourage the EPA to consider complying with both daytime and nighttime visibility standards for the forty-six national parks and other class 1 federal areas.

Thank you for your consideration,

Bryan Faehner
Legislative Representative



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