

From: Julie Schaar [Redacted]
Date: Thu, 1 Mar 2012 23:06:21 -0500
To: Ruth Lunn <lunn@niehs.nih.gov>
Subject: Comments regarding the nomination of Light at Night (LAN) for the Report on Carcinogens

Dr. Ruth Lunn
Director, Office of the RoC, DNTP, NIEHS
P.O. Box 12233, MD K2-14 Research Triangle Park, NC 27709 Telephone (919) 316-4637 Fax:
(919) 541-0144
lunn@niehs.nih.gov

Comments regarding the nomination of "shiftwork involving light at night" for the Report on Carcinogens

Dear Dr. Lunn:

I would like to thank your agency for looking into the issue of exposure to light at night (LAN). Please accept these comments to support the acceptance of LAN as a carcinogen.

The direct carcinogenic effect found in various research projects is from LAN, not Shiftwork, although the World Health Organization through the International Agency for Research on Cancer (IARC), listed shift work under Group 2A - as a "probable carcinogen." Convincing evidence emerging from scientific research is that LAN, specifically in the range of the blue-white light spectrum, is the 'substance' that affects natural human melatonin production, leading to various carcinogenic effects.

While we are aware of the IARC report and others linking shiftwork to melatonin suppression and circadian disruption, concerns exist for exposure to LAN in other circumstances, such as sleeping areas in a barracks or institution and where monitors with blue-white light are used, such as TV, computers and hand-held devices.

One relevant statement and a list of 9 scientific references taken from a new article addressing the issue of LAN and human health, can be found at www.illinoislighting.org/health2.html:

Hardly any of the human body's functions, nor any of its abilities to combat disease, are removed from the influences of the circadian cycle. For example, it appears that disruption of the circadian cycle reduces the body's ability to resist a number of forms of cancer. Evidence is mounting for the whole chain of causality -- exposure to light at night, leading to reduced production of the hormone melatonin, leading to an increased rate of cancer¹⁸⁻²⁶.

¹⁸Circadian clock and breast cancer: a molecular link [Sahar S, Sassone-Corsi P, *Cell Cycle* \(2007 Jun 1\) 6 \(11\): 1329-1331](#)

¹⁹Does the modern urbanized sleeping habitat pose a breast cancer risk? [Kloog I, Portnov BA, Rennert HS, Haim A, *Chronobiology International* \(2011 Feb 1\) 28 \(1\): 76-80](#)

²⁰Artificial lighting in the industrialized world: circadian disruption and breast cancer [Stevens RG, Cancer Causes Control \(2006 May 1\) 17 \(4\): 501-507](#)

²¹Circadian regulation of molecular, dietary, and metabolic signaling mechanisms of human breast cancer growth by the nocturnal melatonin signal and the consequences of its disruption by light at night [Blask DE, Hill SM, Dauchy RT, Xiang S, Yuan L, Duplessis T, Mao L, Dauchy E, Sauer LA, Journal of Pineal Research \(2011 Oct 1\) 51 \(3\): 259-269](#)

²²Light at night co-distributes with incident breast but not lung cancer in the female population of Israel [Kloog I, Haim A, Stevens RG, Barchana M, Portnov BA, Chronobiology International \(2008 Feb 1\) 25: 65-81](#)

²³Nighttime light level co-distributes with breast cancer incidence worldwide [Kloog I, Stevens RG, Haim A, Portnov BA, Cancer Causes Control \(2010 Dec 1\) 21 \(12\): 2059-68](#)

²⁴Light during darkness and cancer: relationships in circadian photoreception and tumor biology [Jasser SA, Blask DE, Brainard GC, Cancer Causes Control \(2006 May 1\) 17 \(4\): 515-523](#)

²⁵Light pollution, reproductive function and cancer risk [Anisimov VN, Neuroendocrinology Letters \(2006 Jan 1\) 27 \(1-2\): 35-52](#)

²⁶Global co-distribution of light at night (LAN) and cancers of prostate, colon, and lung in men [Kloog I, Haim A, Stevens RG, Portnov BA, Chronobiology International \(2009 Jan 1\) 26 \(1\): 108-125](#)

[Redacted]