

# Light Pollution as a New Risk Factor for Human Breast and Prostate Cancers

Abraham Haim · Boris A. Portnov

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 Springer

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# Preface

Humans are diurnal organisms whose biological clock and temporal organization depend on natural light/dark cycles. Throughout evolution, changes in the photoperiod were a signal for seasonal acclimatization of physiological and immune systems as well as of behavioral patterns. The invention of electrical light bulbs created more opportunities for work and leisure. However, exposure to artificial light at night (LAN) affects our biological clock, and suppresses pineal melatonin (MLT) production.

Knowledge accumulated in the past decades and our better understanding of eye photoreceptors and the discovery of melanopsin in the bipolar ganglions gave us a better perspective on light intensity and light spectrum in relation to the entrainment of our biological clock and the importance of events with timing.

In many electrical light bulbs used today and considered “environmentally friendly,” electrical energy is converted into short wavelength illumination thus increasing the light intensity to the levels we have not been used to in the past. Such illumination effectively becomes “light pollution” which disrupts pineal melatonin (MLT) production. Among its other properties, MLT is an antioncogenic agent, and therefore, its suppression increases the risks of developing breast and prostate cancers (BC&PC).

To the best of our knowledge, this book is the first authored book which attempts to address the linkage between light pollution and BC&PC in humans. It explains several state-of-the-art theories, linking light pollution with BC&PC. It also illustrates research hypotheses about health effects of light pollution using the results of animal models and population-based studies.

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