



Why Environmental Pollution Makes our Eye Sick?

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Letter to Editor

Ageing, inherited disease and ill health may cause severe eye damage naturally, nevertheless, environmental pollution also contribute albeit minor problems to the human eyes. Literature on the subject revealed that because of sex steroid hormone (SSH, such as estrogen, progesterone, and androgen) actions, various physiological conditions, such as age, menstrual cycles, pregnancy, and menopause or andropause, where the hormone milieu changes, affect vision. SSH acts through their specific receptors. The quantitative and qualitative presence of SSH in the body is a function of sex, age, and genetic make-up of an individual. These variables can, therefore, significantly alter the anatomical, physiological, and pathological status of the SSH-responsive organs. Now the question arises as to whether these hormones have any direct role in organs, tissues, and cells that are apparently identical in both the sexes; for the first time we have shown that they differ in man and woman and hence there is a sexual dimorphism exists in the human eye. The National Institute of Environmental Health have reported the existence of nearly 70,000 registered chemicals in our environment and food chain which can mimic the actions of hormones especially steroid hormones. These are called xenoestrogens, which reach us through environment, air, water and food. We are exposed to pesticides, herbicides, and fungicides, plastic goods, creams and cosmetics containing ingredients such as parabens and stearylalkonium chloride, nail polish and nail polish removers, surfactants found in many condoms and diaphragm gels, new carpet, X-rays, drinking water stored in plastic containers exposed to heat, fabric softeners, microwaving food in plastic containers especially with plastic wrap to cover food for microwaving, petroleum products from car fumes, noxious gas such from copiers and printers, carpets, fibreboards, etc., computer monitors, televisions etc. that emit high levels of electromagnetic fields while using birth control pills, spermicide, hormone replacement therapy. These chemical compounds act as a weak synthetic estrogen (xenoestrogen) whose estrogen-like activity makes it a hormone disruptor by binding to the estrogen receptors.

OPEN ACCESS

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Received Date: 14 Aug 2016

Accepted Date: 20 Sep 2017

Published Date: 27 Sep 2017

Citation:

Gupta PD, Muthukumar A. Why Environmental Pollution Makes our Eye Sick?. *J Clin Ophthalmol Eye Disord*. 2017; 1(2): 1010.

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There is a link between environmental estrogens and eye disorders. Some of these xenoestrogens are making our eyes vulnerable to hundreds of diseases. Dry eye disease, uveitis, and progressive diseases, such as retinal bleeding and cataracts, are influenced by prolonged exposure to xenoestrogens present in the air and water. Bisphenol A (BPA), an environmental estrogen present in the food and drink storage cans, as well as being a component of plastic in dental fillings can cause irritation of the human eyes. Some studies have shown that prenatal exposure to synthetic estrogen like chemicals can cause macular degeneration. In a particular study using mice strong endocrine receptor activation in the eyes were expressed when they were exposed to pesticides with xenoestrogens. The xenoestrogen's potency increases tenfold once they reach our system through several environmental factors. Cancer due to the exposure to xenoestrogens may lead to intraocular, choroidal and orbital metastasis of the eye. These tumours may never be discovered unless they affect vision, are visible to the patient, or push the eye forward. Hence there is an urgent need to study the individual and synergistic mechanism through which these xenoestrogens threaten our eye.