Instruction for abstract submission:

Summarised scientific abstract, should be in one paragraph of maximum 350 words, the major aspects of the entire abstract in a prescribed sequence with title which includes:

1) Introduction/Background with overall purpose of the study and the research problem(s)
2) The basic design of the study/Methodology
3) Major findings/Result of your investigation
4) Discussion and conclusion

Font: Complete abstract must be in Times New Roman Font

Font Size

Title of the research: 13.5 and bold

Author(s) name: 10 and Presenting author name with * asterisk

Author(s) affiliation: 8 and italics

Abstract: 12

Abstract sequence title: 12 and bold

Mode of Presentation: ☐ **Oral [or]** ☐ **Poster**
(Please select preferred one)

Environmental impact of estrogens on human, animal and plant life: A critical review

Muhammad Adeel a, Xiaoming Song a, Yuanyuan Wang a, Dennis Francis a, Yuesuo Yang a,b,*
a Key Lab of Eco-restoration of Regional Contaminated Environment (Shenyang University), Ministry of Education, Shenyang 11044, PR China
b Key Lab of Groundwater Resources & Environment (Jilin University), Ministry of Education, Changchun 130021, PR China

Background: Since the inception of global industrialization, steroidal estrogens have become an emerging and serious concern. Worldwide, steroid estrogens including estrone, estradiol and estriol, pose serious threats to soil, plants, water resources and humans. Indeed, estrogens have gained notable attention in recent years, due to their rapidly increasing concentrations in soil and water all over the world. Concern has been expressed regarding the entry of estrogens into the human food chain which in turn relates to how plants take up and metabolism estrogens. **Objectives:** In this review we explore the environmental fate of estrogens highlighting their release through effluent sources, their uptake, partitioning and physiological effects in the ecological system. We draw attention to the potential risk of intensive modern agriculture and waste disposal systems on estrogen release and their effects on human health. We also highlight their uptake and metabolism in plants. **Methods:** We use MEDLINE and other search databases for estrogens in the environment from 2005 to the present, with the majority of our sources spanning the past five years. Published acceptable daily intake of estrogens (μg/L) and predicted no effect concentrations (μg/L) are listed from published sources and used as thresholds to discuss reported levels of estrogens in the aquatic and terrestrial environments. Global levels of estrogens from river sources and from Wastewater Treatment Facilities have been mapped, together with transport pathways of estrogens in plants. **Results:** Estrogens at polluting levels have been detected at sites close to wastewater treatment facilities and in groundwater at various sites globally. Estrogens at pollutant levels have been linked with breast cancer in women and prostate cancer in men. Estrogens also perturb fish physiology and can affect reproductive development in both domestic and wild animals. Treatment of plants with steroid estrogen hormones or their precursors can affect root and shoot development, flowering and germination. However, estrogens can ameliorate the effects of other environmental stresses on the plant. **Discussion and Conclusions:** There is published evidence to establish a causal relationship between estrogens in the environment and breast cancer. However, there are serious gaps in our knowledge about estrogen levels in the environment and a call is required for a worldwide effort to provide more data on many more samples sites. Of the data available, the synthetic estrogen, ethinyl estradiol, is more persistent in the environment than natural estrogens and may be a greater cause for environmental concern. Finally, we believe that there is an urgent requirement for inter-disciplinary studies of estrogens in order to better understand their ecological and environmental impact.

KEYWORDS: *Aquatic ecology; Bioavailability; Endocrine disrupting chemical (EDC); Environmental fate; Estrogens; Plant uptake; Water and soil*