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# Environmental contaminants: Effects on mammalian reproductive and developmental biology

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The exposure of mankind and animals to agricultural pesticides, new drugs, life enhancing chemicals and other environmental additives has placed significant pressure on every country's infrastructure and its natural resources resulting in a profound deterioration of environment. Metals and pesticides are notable for their wide environmental dispersion from such activity; their tendency to accumulate in select tissues of the human body and their overall potential to be toxic even at relatively minor levels of exposure.Metals have been harnessed for human industry and products for millenia. Some metals are essential to life and play irreplaceable roles in the functioning of critical enzyme system while others are xenobiotics. Once a metal is absorbed, it is distributed in tissues and organs; but metals tend to persist in some storage sites like the liver, bones and kidneys, for years or decades. The toxicity of metals most commonly involves the brain and the kidney, but other manifestations occur.Pesticides are the widely used chemicals world wide and are demonstrated to interfere with sexual development, reproduction and fertility when exposure occurs during vulnerable life stages. Pesticides have been widely used throughout the world in connection with the increased output and intensification of agricultural production. Many of them belong to the class of environmental estrogens, hence directly affecting the reproductive organs and indirectly cause hormonal dysfunction by acting as endocrine disruptors. Disorders of reproduction and hazards to reproductive health and associated functions have become prominent issues in recent decades. The male and female reproductive systems are vulnerable to the effects of the chemicals, because impairment takes place during spermatogenesis and also disrupts ovarian function. Developmental toxicity is the study of pharmacokinetics, mechanisms, pathogenesis and their outcome following exposures to agents or conditions that cause abnormal development. The focus has been to provide a comprehensive summary of present available information on heavy metals in environment, their occupational exposure and associated recent trend in reproductive dysfunction. It is possible that low-level metals exposure contributes much more towards the causation of chronic disease and impaired functioning than previously thought.A modern technique being used to address this problem is toxicogenomics, where studies are made on how the genome is involved in responses to environment stressors is a major development. The reproductive toxicologists can assess differences and similarities in response to pesticide exposure between the young and adult in species as also among species.It will go a long way in developing new approaches for determining the safety of pesticides and the need for innovative regulatory policy to protect human and environmental health and in turn encourage conservation of species.

## Biography

S.S. Hundal completed his Ph.D. from Punjab Agricultural University, Ludhiana (India) and joined as Lecturer of Zoology in August 1988 and subsequently as Professor of Zoology in July 2008. He has undergone a number of trainings in Reproductive Biology/Toxicology and participated in several Conferences in India and Abroad as an invited speaker. He is member of International Professional Bodies and has published more than 50 research papers and more than 25 extension articles in reputed National and International journals and serving as an editorial board member of repute. He has guided 6 M.Sc. students and presently 2 Ph.D. and 4 M.Sc. students are working with him. He has been on the advisory committees of more than 8 M.Sc. and 5 Ph.D. students as Dean Post Graduate Studies Nominee. He has been Member Board of studies and external examiner for many Universities; in addition, he is Coordinator of External Examinations, Coordinator International Programs and Coordinator Placement Cell for his College.

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