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# Environmental contaminants and reproductive abnormalities–A perspective

**S S Hundal**
Punjab Agricultural University, India

Punjab (lat. 29deg 32' – 32 deg 32'N; long. 73 deg 55' – 76deg 50'E) in India has been referred to as 'food bowl' of the country and was a pioneer in ushering in the Green Revolution and strengthening food security. The South West region of Punjab has become a major area of concern due to the presence of arsenic and pesticide cocktail in the water and soil. Our studies from the region using fish an indicator from natural sites have revealed alterations in liver and kidney histology as well as deposition of metal residue in fish muscle. Laboratory based experiments on Wistar female rats using sub chronic effect of sodium arsenite for up to 60 days has revealed the decrease in anti oxidative potential of the lungs, spleen and brain, making them susceptible to various diseases due to generation of oxidative stress. Insecticides disrupt ovarian function which greatly affects women's reproductive and endocrine health. Our survey work in 17 villages of the region endemic to such disorders backed with experimental work has led to some pointers of the initiation of cancer related symptoms even in sub chronic exposure to chlorpyrifos which causes oxidative stress. The female population showed a prevalence of breast cancer (77%) among the age group of 50-54 years of age. Increase in ovarian and uterus epithelial surface, ductal thickness and in branches, alveoli and terminal buds in mammary glands has been as a result of sub chronic exposure of chlorpyrifos. Thus exposure to insecticides, occupational or otherwise, may be a significant contributing factor to the high cancer incidence in this region. Trapped small rodents from the study area indicated chromosomal aberration in somatic cells but teratogenic effects were, however, not reported. A comprehensive summary of arsenic and chlorpyrifos, their occupational exposure and associated reproductive dysfunctions in the region has been presented in the female of the species. It is possible that low-level metal and insecticide exposure contributes much more towards the causation of chronic disease and impaired functioning than previously thought. 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.

## Biography

S S Hundal, Professor of Zoology, completed his PhD from the Punjab Agricultural University, Ludhiana, India. He has a distinguished career in teaching, research and outreach activities. His main research interests are effect of environmental contaminants on animal physiology and on bioconversion of agricultural wastes. He has supervised 9 MSc and 2 PhD students. He has published more than 50 research papers; attended as resource person and invited speaker at more than 35 national and international conferences and seminars. He is Reviewer for four international journals and serving on the Editorial Board of two journals.

hundalswarndeep@gmail.com