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## Determination of organochlorine pesticides in water samples and decomposition kinetics of chlorpyrifos using advanced oxidation process

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In the present study, pesticide residues in the ground water samples collected from Charsadda district were determined. SPME-GC-ECD method was used for extraction and analysis of 20 organochlorine pesticides in the ground water samples of Charsadda area. SPME-GC-ECD method provided good percent recoveries ( $91.3 \pm 2.7\%$  to  $104.5 \pm 3.1\%$ ) and lower limits of detections ( $0.002$ - $0.030 \mu\text{g L}^{-1}$ ) which are very lower than their maximum permissible contamination levels. About 50% surface water samples collected from Charsadda were found contaminated with pesticides  $\gamma$ -BHC, heptachlor, aldrin and dieldrin. The decomposition of chlorpyrifos (CPF) in aqueous solution by gamma-irradiation was also carried out in the present investigation. Aqueous solutions of different concentrations of CPF ( $200$ - $1000 \mu\text{g L}^{-1}$ ) were irradiated at various gamma-radiation doses. At absorbed dose of  $600 \text{ Gy}$   $500 \mu\text{g L}^{-1}$  CPF, solution was completely degraded. The CPF decomposition followed pseudo-first order (decay) with respect to dose. The G-values for gamma radiation induced degradation of CPF solution ( $500 \mu\text{g L}^{-1}$ ) were ranged from  $0.024$  to  $0.209$  molecules/ $100 \text{ eV}$ . The dose constants found increases with the decreases in the initial concentration of CPF. The inorganic by-products sulfate, phosphate and chloride anions were quantitatively determined by ion chromatography.

### Biography

M Ismail obtained his MPhil degree in Physical Chemistry from the National Center of Excellence Physical Chemistry, University of Peshawar (Pakistan) in 2008. Now he is working as a PhD scholar in Environmental and Radiation Chemistry Lab in the same institution and has submitted his PhD thesis for evaluation. He has five years research experience in the Centre and also has six month research experience in the University of California, Irvine, USA, under IRSIP fellowship of HEC. He has published several research papers (on environmental samples analysis, degradation of toxic compounds using advanced oxidation techniques and environmental radioactivity) in international journals of repute of good impact factor. His research interest is degradation of toxic compounds using advanced oxidation techniques and instrumental analysis of pesticides and environmental samples using various instruments like GC, IC, UV, HPLC, HPLC/MS, GC/MS and UPLC/MS/MS to develop new analytical methods for enhanced sensitivity and selectivity.

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