ORAL PRESENTATIONS

[ID-O#102] Spatial Analysis and Health Implications of Organochlorine Pesticide Residues in Tulkarem Soil, State of Palestine

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Objective: This study aimed to investigate the spatial analysis of organochlorine pesticide (OCP) residues in the soil of Tulkarem, State of Palestine. In addition, assess their potential health implications.

Methods: Soil samples were systematically collected from various locations in Tulkarem during the summer season from September 11 to 28 October 2022. Ten soil samples were analyzed for OCP residues using a gas chromatograph coupled with mass spectrometer techniques (GC-MS). The study further examined the spatial distribution patterns of these residues, identifying hotspots of contamination and areas with relatively lower concentrations.

Results: The analysis revealed the presence of multiple OCPs, including DDE-o,p', DDE-p,p', DDD- o,p', DDD-p,p', DDT-o,p', and DDT-p,p', among others. Levels of these pesticides varied significantly across different sampling sites. The highest concentrations of total OCPs were observed at location North Tulkarem City in Zeita agricultural zone, with a sum of OCPs reaching 100.15 ng/g. In contrast, other locations exhibited lower but still concerning levels ranging from (ND - 47.5 ng/g). The potential health risks associated with these OCP residues were assessed using standard risk assessment models, considering factors such as soil ingestion, dermal contact, and inhalation pathways.

Conclusion: The persistence of OCPs in the environment and their bio-accumulative properties pose significant risks to human health and ecosystems. The findings underscore the urgent need for regulatory measures and remediation strategies to mitigate the contamination and reduce the associated health risks. This research provides crucial insights into the extent of OCP contamination in Tulkarem. It highlights the importance of continuous monitoring and public health interventions to protect the community and environment from the harmful effects of persistent organic pollutants.