Centre for Research Expertise in Occupational Disease

Research that makes a Difference

	Title	**Workplace sensitizers: exploration of skin and lung routes of exposure, responses and prevention practices: preliminary studies**
	Year	**2005 – 2006**
Investigators		Linn Holness**,** Gary Liss, Susan Tarlo, Jim Purdham, Frances Silverman, Irena Kudla
CREOD Research Program		Occupational Skin and Respiratory Disease
Research Theme		Prevention, Health Services, burden of disease, identification of allergens
Funder		AllerGen/CREOD
Product Type		Workshop
Background		Some agents cause allergic responses in both the skin and respiratory systems. Often, the same chemical may cause contact dermatitis (WRCD) in one worker, and occupational allergic asthma (OAA) in another. Prevention of these diseases depends on a better understanding of both the host factors and environmental factors involved.
Study Focus (Research Question/Goals/ Methods)		We held a 2-day workshop which brought together 58 researchers with experience in the host and environmental components of WRCD and OAA. In particular, we targeted those who have considered the two organ systems together (either from a mechanistic or response perspective). The goal was to co-develop a set of questions that need to be addressed in future work, and develop new collaborations to pursue these questions.
Key Findings		**Key questions for future research:** *Mechanistic research* • Define the role played by dendritic cells in the development of qualitatively divergent immune responses to chemical allergens. • Perform further work on animal models for chemically induced asthma with good asthma phenotype, to assess mechanisms of sensitization and elicitation. *Mechanistic/Clinical research* • Using a selected common contact allergen, explore whether there are polymorphisms that impact on inter-individual differences in susceptibility to skin sensitization. *Mechanistic/Exposure research* • Investigate whether it is possible to define the route of sensitization in proven cases of chemical respiratory allergy/occupational asthma by phenotypic characterization of allergen-specific T lymphocytes. That is, for instance, do allergen-specific T lymphocytes express CLA (skin-homing receptor) inclusive of cutaneous sensitization. This would specifically address whether and to what extent respiratory allergy to chemicals might result from dermal contact. *Exposure research* • Consider how best to exploit longitudinal antibody (IgG) measurements as a means of monitoring immunologically-relevant levels of exposure. • Assess potential for dermal exposure in real working conditions *Clinical/Epidemiological research* • Conduct a detailed systematic review of the extent to which there is good clinical evidence for a defined panel of respiratory allergens to cause allergic contact dermatitis. Chemicals to be investigated: Acid anhydrides (trimelittic anhydride, phthalic anhydride), Diisocyanates (diphenylmethane diisocyanate, hexamethylene diisocyanate). • Prospective study of respiratory status in individuals with well-documented allergic contact dermatitis, and vice versa.
Implications for Health/Labour Policy and Practice		There is tremendous value in bringing the research knowledge and clinical experience together to identify new opportunities for research in the clinical setting. The workshop's success confirmed both the interest and the challenge of doing research across disciplines, as well as across body systems. **Traditional, system-focused scientific meetings do not provide opportunities to discuss cross body-**

	system research – more meetings like ours would be extremely valuable.
Publication & Presentation Information	• Report posted – www.allergen-nce.ca/Research/Workshop_Reports.html