



	Title	Key exposures and industries causing work-related contact dermatitis
	Year	2006 – 2008
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CREOD Research Program	Occupational Skin and Respiratory Disease	
Research Theme	Prevention, Burden of disease, Identification of allergens	
Funder	WSIB	
Product Type	Research Study	
Background	Traditionally, research related to occupational allergic contact dermatitis (OACD) and occupational asthma (OA) has been done in organ system silos, and rarely focusing on the two together. There is evidence that some agents cause both irritant and allergic responses in both the skin and respiratory systems, but these agents are not well documented. Better understanding of the inter-relationships between inhalation and dermal routes of exposure and between respiratory and skin responses to workplace chemicals would be helpful in developing appropriate prevention strategies.	
Study Focus (Research Question/Goals/Methods)	<p>We used the North American Contact Dermatitis Group (NACDG) database, which now includes occupational factors, to identify common occupational contact allergens. We then linked this information to the respiratory literature to identify whether these agents caused occupational asthma (OA). We also assessed the utility of the NACDG database itself, as a tool for research and surveillance.</p> <p>We analyzed patch test data for 3676 patients seen at the two Canadian NACDG Centres between 2001 and 2006.</p>	
Key Findings	<ul style="list-style-type: none"> • 17% of subjects had an overall work-related CD diagnosis. Of these overall work-related cases, 64% had an allergic diagnosis (OACD) and 34% had an irritant diagnosis. • Industries most commonly affected by OACD were aircrafts and parts, beauty shops, and hospitals. Workers at highest risk of OACD were: <ul style="list-style-type: none"> - Electrical equipment assemblers - Precision assemblers - Hairdressers and cosmetologists • The 10 most common occupational contact allergens for OACD and their association with OA are listed below. <p>Established association with OA:</p> <ul style="list-style-type: none"> - Epoxy resin - Nickel sulfate - Cobalt chloride - Potassium dichromate - Glutaraldehyde <p>Possible association with OA:</p> <ul style="list-style-type: none"> - P-phenylenediamine - Formaldehyde <p>Not listed in the literature or reference docs as a cause of OA:</p> <ul style="list-style-type: none"> - Thiuram - Carba mix - Glyceryl thioglycolate • There is a general lack of consistency in how sensitizer (or equivalent) notations are assigned across organizations. For example, sensitizer notation in the TLV handbook does not distinguish between the respiratory, dermal, or conjunctival organ systems. • Over time, the NACDG database may be useful for identifying common or emerging occupational contact allergens. 	



<p>Implications for Health/Labour Policy and Practice</p>	<ul style="list-style-type: none"> • It is important to consider both dermal and inhalation routes of exposure. • Epoxy resin, nickel sulfate, cobalt chloride, potassium dichromate, and glutaraldehyde should be targeted for more focused research and prevention activities. • High-risk worksites (aircrafts and parts, beauty shops, hospitals) are potential partners for future research. • Improved consistency in sensitizer notation across reference materials commonly used by occupational hygienists could lead to: <ul style="list-style-type: none"> - Earlier recognition of occupational exposures - Improved exposure control strategies in the workplace - Better outcomes for workers
<p>Publication & Presentation Information</p>	<p><u>Publications</u></p> <ul style="list-style-type: none"> • Arrandale VH, Liss GM, Tarlo S, Pratt, Sassville D, Kudla I, Holness DL. Key exposures causing work-related allergic contact dermatitis and evidence for dual causation of occupational asthma. Report to Research Advisory Council, Workplace Safety and Insurance Board, July 2009. • Arrandale VH, Liss G, Tarlo SM, Manno M, Pratt M, Sasseville D, Kudla I, Holness DL. Analysis of occupationally-related positive patch test results in the 2001-2002 North American Contact Dermatitis Group Canadian data. <i>Dermatitis</i> 2009;20:226-227. • Arrandale VH, Liss G, Tarlo S, Manno M, Pratt M, Sasseville D, Kudla I, Holness DL. Key exposures causing work-related allergic contact dermatitis and occupational asthma: a comparison using North American Contact Dermatitis Group Data (2001-2002) and the peer-reviewed asthma literature. <i>Am J Respir Crit Care Med</i> 2009;179:A1646. • Arrandale VH, Liss G, Tarlo SM, Pratt M, Sasseville D, Kudla I, Holness DL. Inconsistencies in sensitizer notation for common occupational contact allergens in the 2001-2006 North American Contact Dermatitis Group Canadian data. <i>Dermatitis</i> 2010;21:232. • Arrandale VH, Liss G, Tarlo S, Pratt M, Sasseville D, Kudla I, Holness DL. Occupational contact allergens: can they also cause occupational asthma? <i>Am J Ind Med</i> 2012;55:353-360. <p><u>Presentations</u></p> <ul style="list-style-type: none"> • Arrandale VH, Liss G, Tarlo S, Manno M, Pratt M, Sasseville D, Kudla I, Holness DL. Analysis of occupationally related positive patch test results in 2001-02 North American Contact Dermatitis Group Canadian data. American Contact Dermatitis Annual Meeting, San Francisco, March 2009. • Arrandale VH, Liss G, Tarlo S, Manno M, Pratt M, Sasseville D, Holness DL. Exposures causing occupational allergic contact dermatitis and occupational asthma: an analysis using the North American Contact Dermatitis Group Data (2001-2002) and the peer-reviewed asthma literature. American Thoracic Society International Conference, San Diego, May 2009. • Arrandale V, Liss G, Tarlo S, Manno M, Pratt M, Sassville D, Kudla I, Holness DL. Employment characteristics of patients with occupationally related positive patch test results: an analysis using data from the Canadian sites of the North American Contact Dermatitis Group (NACDG). OEESC 2009, Edinburgh, June 2009. • Arrandale VH, Liss G, Tarlo SM, Pratt M, Sasseville D, Kudla I, Holness DL. Inconsistencies in sensitizer notation for common occupational contact allergens in the 2001-2006 North American Contact Dermatitis Group Canadian data. American Contact Dermatitis Society Annual Meeting, Miami, March 2010.