

IBEW LU 353 Ergonomic Research Project Summary

~ What is the IBEW? ~

The International Brotherhood of Electrical Workers (IBEW) represents approximately 750,000 members in Canada and the United States who work in a wide variety of fields, including utilities, construction, telecommunications, broadcasting, manufacturing, railroads and government.

~ What is Local 353? ~

Local Union 353 is an affiliate of the IBEW. Local 353 was established in 1903 and was the third local union in Canada. Local 353 is the largest and one of the oldest electrical locals in Canada with approximately 7,000 active and 1,400 retired members and works on behalf of its members to ensure that they receive the best wages, benefits and working conditions in the largest construction market in Canada.

~ What is OHCOW? ~

The Occupational Health Clinics for Ontario Workers (OHCOW) is a pro-active team of health professionals committed to promoting the highest degree of physical, mental and social well being for workers and their communities. A team of nurses, hygienists, ergonomists and physicians see patients and identify work-related illness and injuries, promote awareness of health and safety issues, and develop prevention strategies at the Toronto clinic.

~ Ergonomic Research Project ~

IBEW Local 353 and the Local 353 WSIB Service in cooperation with the Toronto OHCOW clinic commissioned an ergonomic research project to examine the work of Local 353 electricians in the five electrical sectors: Low Rise Residential, High Rise Residential, ICI, Communications, and Line & Utility & Traffic.

Gary Majesky, Local 353's WSIB consultant for the last 10 years, recognized the lack of ergonomic information related to the electrical work of 353 members. A needs analysis, directly focusing on workplace injuries and preventative injury measures, highlighted the need for updated job descriptions that include a task analysis and physical demands description (PDD). Current PDD information on file at the Local was incomplete and lacked a consistent structure that could be presented to health care professionals and appeals forums.

Updated PDDs, along with task analysis is useful in a number of ways. Consistent job descriptions, task analysis and PDDs in all sectors will enable union members and their health care professionals to better understand the physical demands normally experienced in various trade sectors. For most laypeople, the only experience they have had with the



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electrical trade involved in-home wiring. Although that is one aspect of electrical work, it is much more broad and varied.

Updated ergonomic literature will also enable supervisors and health care professionals to better identify acceptable work for “back to work” placement after an injury. The literature can also be used to educate workers and employers, proactively reducing injury risk.

The goal of the Ergonomic project was to generate current task analysis for each job activity with photographs illustrating the work being done and to generate PDDs for the five electrical sectors.

~ Local 353's Expectation ~

The Executive Board of Local Union 353 commissioned the development of ergonomic initiative for the five electrical trade sectors. Gary Majesky, Local 353 WSIB consultant, and Dr. Syed Naqvi, OHCOW ergonomist, would guide the project.

Project deliverables were initially outlined to include PDDs and task descriptions with photographs for each of the five trade sectors and a one to two page literature review for eight key job demands of electrical work which were to focus on force, duration, frequency and repetition demands and the risk of developing a musculoskeletal disorder (MSD).

~ Initial Information ~

Local 353 had over the years compiled an assortment of job descriptions and PDDs for each of the five trade sectors. The PDDs were generated through WSIB cases and Ad Hoc work site reviews and not through Union initiation per se, so that each PDD had a different structure making them hard to compare. The PDDs and job descriptions were also a number of years old and did not reflect recent changes and growth in the trade sectors.

In April 2005, Local 353 commissioned OHCOW to complete a musculoskeletal discomfort/symptom survey of its membership. The surveys were completed by LU 353 members who participated in the union's very successful 2005 Occupational Health Clinic. The focus of the survey included basic demographics and musculoskeletal discomfort in various body parts, assessment of level of discomfort, and frequency of discomfort. Most respondents of the survey were from the ICI sector (81.3%). OHCOW found that within the last year (at the time of survey), an average of 50.35% of reporting union members experienced work related aches, pain, discomfort or numbness attributed to the physical demands of work.



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~ Project Development ~

Physical Demands Description (PDD)

Before data collection for the project deliverables commenced, courses in Working at Heights and WHMIS (Workplace Hazardous Materials Information System) were completed. Gary Majesky and Local 353 business representatives and organizers (Bill Acorn, Tony Chiappetta, Cam Commandant, John Chapman, Bill Finnerty, and George Smith) solicited the cooperation of participating employers and Local members of the project in advance of site visits to ensure everyone involved was given the opportunity to ask questions and clarify information. It was also clarified that the employers' workplaces and employees' individual performance were not being evaluated during observation, but how the work itself is physically performed.

After reviewing PDD templates used by OHCOW and Local 353's PDDs on file, a template was selected from the Government of Manitoba's safety database (www.gov.mb.ca/labour/safety/). The selected template was comprehensive, from a secure and reputable source, covered a detailed amount of information, provided a structured template that was similar in scope to WSIB templates and was a 2-page form.

Data collection was completed sector-by-sector beginning with Low Rise Residential. Low Rise was reviewed first because the work follows a similar pattern day to day, allowing those collecting data to work through their learning curve before attempting to document a sector with more daily variance of work routines and tasks.

Data collection included photographing and video recording of work being done. When observing a worker, it is imperative to monitor body mechanics first and task steps second. Any questions regarding steps or body mechanics were reviewed by examining the film or photographs taken on site. This eliminated incorrect observations due to false memory retrieval.

Electricians were also asked open-ended questions related to their jobs. Using an open-ended questioning technique allowed the workers to respond with their own opinions and minimized the ability of the questioner to guide or direct the answers. An example of questions being asked includes: "At the end of the day, how does your body feel?"

Height measurements, timing of tasks and force measurements were also taken. Measures taken with the force gage, stopwatch and measuring tape were done three times, with the average of the three measures being recorded. Using the average provides a more realistic measurement by minimizing recording effects of an extreme nature.




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Task Analysis

Data collection also included recording major job tasks and their associated steps. Employee experience and knowledge was used to clarify important job tasks and steps. Only major job tasks were record so that the document could be used by a majority of employees within each sector.

Once data collection was complete, the tasks would be written up and briefly analyzed in accordance with up to date occupational health and safety literature, specifically focusing on NIOSH (National Institute of Occupational Safety and Health) and CCOHS (Canadian Centre for Occupational Health and Safety) guidelines, which are used by the WSIB. A photograph that clearly illustrated the main task was also incorporated into the analysis.

Figure 1 – Task Analysis Layout

<u>Sector Task Analysis</u>		
Job Task Description	Brief Task Analysis	Photo of Task
<p>Rough in – chipping</p> <ul style="list-style-type: none"> - Read updated blueprints - Get jackhammer - Chip away at concrete until an adequate opening has been made 	<ul style="list-style-type: none"> - Chipping occurs occasionally and is usually below shoulder level - Chipping requires high force production and static contraction particularly of the shoulder, forearm and back musculature. Prolonged static contraction can cause muscle fatigue & injury as blood flow is constricted [2] - CCOHS recommends reducing continuous vibration to the body as much as possible through rest, anti-vibration gloves & tool re-design to reduce potential of hand-arm vibration injuries [7] - Noise levels above 80 dBA constitute a risk for hearing loss. Ear protection is recommended while chipping [2] 	

Literature Review Papers

The eight key job demands originally slated to be reviewed included the following topics: pipe/conduit bending, slab work, overhead work, installing heavy cable, use of handheld manual tools, use of handheld power tools, working off ladders and kneeling and crouching. Further review of literature revealed connections between topics that lead to topics being combined and the total number of papers decreasing to six. A standard structure for the research papers was adopted and included the following sections: introduction, mechanisms of injury, potential injuries and risk factors for injury. By



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giving the papers a standard structure, they are easier to read and also lend themselves well to comparison between topics.

~ Conclusions ~

The completed ergonomic deliverables fulfill a majority (90%) of the project requirements set forth by the Executive Board of Local 353. In all, a total of 10 PDDs, 4 industry sector task analyses (“Job Descriptions”) and 6 literature review papers were completed. Additional research has been documented for the ICI sector.

Due to constraints, the Communication sector was not analyzed. As the project progressed, Gary Majesky requested additional reviews of ICI projects such as auto plants’ and tenant work. Since a majority of Local 353 members work in the ICI sector where the scope of work is variable, the research project took on a life of its own as it progressed.

It is important that Local 353 pursue the completion of the Communication sector which is slated for early 2006. A small funding commitment is required to hire another ergonomic researcher to complete the project.

On a whole, workers on job sites appreciated the opportunity to express their opinions and participate in a unique health and safety initiative. In a project wrap-up session, OHCOW staff noted this unique project grew out of Gary Majesky’s vision and the final reports provide a unique research template for other construction and industrial unions who want to study the work of their members.

LU 353 has now begun the process of disseminating the research findings with the IBEW International Office, Electrical Contractors, Building Trades Councils & Affiliates, and workers compensation boards and health and safety organizations.

This project is dedicated to the members and veterans who for generations fought for improvements in wages, benefits and working conditions. Through their hard work and sacrifice they built LU 353 into the largest and most progressive IBEW local in Canada. They taught us the principles of brotherhood, so we in turn can teach others.

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