



Occupational
Cancer
Research
Centre

OCCUPATIONAL CANCER RESEARCH CENTRE

YEAR 4 (2012-2013) YEAR END REPORT

June 14, 2013

Towards a cancer-free workplace

OCRC 2012-2013 YEAR END REPORT FOR YEAR 4

Introduction

We are delighted to submit to you the fourth annual report of the Occupational Cancer Research Centre (OCRC). The OCRC is based at Cancer Care Ontario and is jointly funded by the Workplace Safety and Insurance Board (WSIB), the Ontario Division of the Canadian Cancer Society (CCS), and Cancer Care Ontario (CCO), with the support of the United Steelworkers. The goal of the Centre is to fill the gaps in our knowledge of occupation-related cancers and to translate these findings into prevention programs to minimize workers' exposures to carcinogens and thereby improve the health of workers.

Year 4 (2012-2013) of the Centre's operation was notable for its achievements and for the external validation it received. In October 2012, the first three years of OCRC's performance were evaluated by an external review committee. This evaluation was organized by the WSIB's Research Advisory Council, CCS and CCO. The review was extremely positive. The most significant comment to highlight upfront is that the Review Panel found that the Centre has consistently exceeded expectations at every level of the OCRC 5-year Strategic Plan, which is the guiding document written at the Centre's inception in 2009.

Some of the Centre's most notable accomplishments in Year 4, which will be expanded upon in this report, are worth highlighting. The Centre was awarded a four-year cross-Canada team grant by the Canadian Cancer Society Research Institute to evaluate the social and economic burden of occupational cancer in Canada. It was awarded a contract to analyze the Ontario Uranium Miners Cohort by the Canadian Nuclear Safety Commission. The staff was expanded to include a new Senior Research Associate, Anna Koné, and a new Research Associate, Garthika Navaranjan, who was previously with OCRC as a student. The Centre also hosted five graduate students for their practicum placements. OCRC researchers published a number of plain-language reports, presented at stakeholder conferences and created posters for stakeholder events. Educational modules, based on a workshop on the classification of carcinogens, can now be found on YouTube and the OCRC website. The Centre engaged a wide range of stakeholders, community organizations, and Ontario's health and safety system partners in research grant proposals as supporters and research partners. The Centre's reputation, both nationally and internationally, was also enhanced by Paul Demers, the Director of the Centre, giving key note talks on occupational cancer to national and international research and stakeholder audiences.

The Centre is moving forward on policy-relevant findings. For example:

1. Night shift work has been classified as a probable cause of breast cancer among women and it is suspected of other chronic disease effects, such as cardiovascular disease and reproductive disorders. In the fall of 2012, the OCRC held a multi-stakeholder workshop on shiftwork. Employer and worker representatives from three different sectors were provided with an evidence-based, prevention-policy-relevant update on the most current scientific evidence on how to mitigate the adverse impacts of night shift work.

2. Currently, Canada does not have an occupational cancer surveillance system. We do not have a rapid, cost-effective means of determining whether workers in specific occupational groups or industry sectors are at an increased risk of cancer when compared to the general population. To address this, the OCRC is working with Statistics Canada and Health Canada to create and test a new system that will identify occupational groups at increased risk of cancer. This will help identify high risk populations, prioritize regulatory action, and respond to stakeholder requests for information.

3. There are some pesticides that have been suspected of contributing to the risk of a number of cancers, such as non-Hodgkin lymphoma. However, because of insufficient evidence, regulators have traditionally been reluctant to implement more stringent regulations restricting these pesticides. For the last three years, the OCRC has been working with the Cross-Canada Study of Pesticides and Health to identify the risks associated with exposure to mixtures of pesticides. The data coming from this study is being combined with data from three similar studies conducted by the US National Cancer Institute. This combined dataset will provide a more definitive picture of the role of pesticide exposure in cancer causation and will, as a result, be a key piece of data to help inform regulatory action.

These achievements were accomplished in an ever-changing external environment. For many years, occupational cancer research in Ontario has been in decline. The creation of OCRC in 2009 can be seen as the first step in changing this trend and recognizing this important issue. In these four years, there have been other indications of this change in emphasis towards occupational disease and cancer prevention. For example, the Canadian Cancer Society's Research Institute established an End 1 Committee with an emphasis on occupational and environmental prevention, to begin to enact the first of the Canadian Cancer Society's three 2010-2015 strategic initiatives as published in their national document, *The Fight for Life*. Other examples are that the Canadian Partnership Against Cancer (CPAC) renewed its funding for CAREX Canada, a project that conducts surveillance of environmental and occupational exposures to help inform policy on cancer prevention, and the Canadian Cancer Research Alliance (CCRA) has highlighted the dearth of funding dedicated to identifying new environmental and occupational carcinogens and have called for an expansion for, "prevention research funding to discover new environmental and occupational risk factors and develop and test interventions to reduce occupational exposures to carcinogens within the workplace".

The most positive recent indicator of this new emphasis placed on occupational disease is the consultation paper released in early 2012 by the Ontario Ministry of Labour and its Prevention Council. This paper has highlighted that occupational disease-related fatalities and claims have increased over the last 10 years while those relating to injuries have declined, and has identified addressing occupational disease as one of its priorities. The provincial paper has also recognized the importance of research as a cross-cutting priority which demonstrates an ongoing commitment to the work conducted at the Centre and the other Ontario occupational health and safety research institutions.

The following is a report on OCRC's (1) research, (2) capacity building, (3) knowledge exchange, and (4) sustainability activities for Year 4, according to the four strategies outlined in the *OCRC 5-Year Strategic*

Plan. This plan was developed and approved by the OCRC Steering Committee, a committee which is chaired by Jean-Yves Savoie and has representation from the four founding organizations, the Ministry of Labour, industry, and the Centre of Research Expertise in Occupational Disease. In Year 4, OCRC significantly expanded upon its initiatives in order to fulfill the Plan, making Year 4 a very productive year. Please note that this report is attached to a full complement of evaluation appendices and the variance report for 2012/2013.

However, before going into details on the Year 4 initiatives, accomplishments and achievements, it is worthwhile to focus on the Three Year Funders' Review Panel's findings.

The Three -Year Funders' Review Panel

In Year 4, the Centre was evaluated by an external review committee, organized by the Workplace Safety and Insurance Board's Research Advisory Council, the Canadian Cancer Society and Cancer Care Ontario. The review was extremely positive. The review took place in October 2012, and the report was made public in February 2013. To quote from the review:

The research productivity in the first three years is impressive both in quantity and in quality. Significant progress has also been made to move forward the knowledge translation agenda. It is patently clear that the OCRC has reached all of its mid-term goals and is well on track to accomplish the objectives of its five-year plan. Achieving clarity over the long term funding of the Centre is essential if these excellent results are to be sustained.

The panel's report goes on to say that, "solving the funding challenge is the key to long-term sustainability. Without resolving this challenge, many of the other recommendations cannot be effectively implemented."

Some of the Panel's recommendations were to:

- (1) Seek long-term sustainability by clarifying the funders' future relationships with the OCRC well ahead of the end of the five-year funding cycle in 2014.
- (2) Strengthen the Centre by hiring a manager to help with administration and an occupational health expert to help with knowledge transfer and to enhance the participation of the adjunct researchers.
- (3) Enhance the value of the Centre to its funders and to the community by expanding its activities to include the effect of workplace carcinogens on the environment and to play an advisory role to industry and trade unions and other third parties;
- (4) Establish an enhanced collaborative role with national and international organizations, and expand the scope to the national level and enhance the profile of the Centre outside of Canada.

The rest of this document will highlight the Year 4's major activities under the Centre's four strategic initiatives.

Strategy I: Conduct Research into the Prevention of Occupational Cancer

In Year 4, the OCRC expanded its research program considerably with external research grants – both provincially and federally. Research projects were conducted in the three areas of the research agenda: 1) Prevention and Intervention studies; 2) the Surveillance of Occupational Cancers and Workplace Exposures; and 3) the Identification of the Causes of Cancer in the Workplace. The Centre's research uses a mix of research methods, is multidisciplinary, and is conducted in collaboration with a strong network of researchers. The results of this research were shared with academic and other stakeholder communities through publications and presentations, and in workshops and at conferences.

In the sections below, the major initiatives in each category and some additional examples are provided, but please look at the appendices for a full list of all activities. Appendices 1-4 provides detailed lists of the scientists, affiliated scientists, research associates, and trainees (respectively) and their ongoing research projects in the areas of intervention, surveillance, and causation, as well as completed projects. Appendices 5 to 7 list the projects in our three areas of research. Appendix 8 provides a list of current grants, submitted grant applications, and grants we are involved in that are housed outside of OCRC. Appendix 9 contains our published or accepted papers, as well as papers that have been submitted and those that are in preparation. Appendix 10 is a list of non-refereed publications and papers that are in preparation. Appendix 11 lists abstract for presentation at conferences. Finally, Appendix 12 lists presentations to external organizations.

1.1 Prevention & Intervention Studies

All OCRC research is designed to produce policy-relevant results and contribute to cancer prevention by raising awareness and producing the information that is necessary to set regulations and target prevention efforts. However, some projects are designed to more directly contribute to prevention efforts or assess their effectiveness, while others take different approaches, such as studying the factors that influence exposure, or examining the factors needed to raise awareness among decision makers in government, industry, and organized labour; it is these projects which are included in this section. A listing of all projects in this category can be found in Appendix 5.

A major intervention project with policy implications was awarded funding in Year 4. It is a four-year national team grant awarded by the Canadian Cancer Society Research Institute (CCSRI) to examine the human impact (deaths, illness, years of life lost) and the economic costs (health care, productivity) of cancer due to workplace exposures in Canada. A cross-Canada team of scientists, epidemiologists and health economists, led by OCRC, will assess the impact of 44 internationally recognized workplace carcinogens on 27 different types of cancer. The study will use historical data collected as part of the CAREX Canada project and the Canadian Workplace Exposure Database funded by the Canadian Partnership Against Cancer. The study's main goals are to examine the magnitude of the problem in Canada by estimating the number of new cancer cases and cancer deaths that can be attributed to workplace factors, and also to weigh the economic impact.

The aim of the research is to provide the hard facts necessary to bring about policy change to promote prevention and create safer workplaces across Canada. For example, we believe the data generated by

this project will encourage both federal and provincial governments to consider passing prevention regulations such as Ontario's Toxics Reduction Act (TRA) which came into effect last year, or to lower the allowable levels of occupational exposure to carcinogens, which are reviewed annually. Although the TRA requires companies to report the use of toxic chemicals and produce a pollution prevention plan, it does not require them to change their practices. The data generated by this study will help encourage voluntary reductions in emissions by companies. The findings will help target the changes needed to strengthen regulations or improve enforcement. They will provide a baseline to examine the potential benefits of prevention activities on future cancer rates.

Another key project is aimed at identifying ways to reduce the impact of shiftwork. Although night shiftwork is a suspected cause of breast cancer, there are many other health impacts, such as the increased risk of workplace injuries, and the increasing risk of cardiovascular disease and reproductive disorders. Unfortunately, it is not possible to eliminate all work at night. In collaboration with cancer prevention researchers at the University of British Columbia we produced a systematic review of potential interventions to reduce the impact of shiftwork. In the fall of 2012, the OCRC held a multi-stakeholder workshop on shiftwork. There were over 100 participants. Employer and worker representatives from three different sectors were provided with an evidence-based, prevention-policy-relevant update on the most current scientific evidence on how to mitigate the adverse impacts of night shift work. Workshop attendees also discussed sector specific challenges and opportunities.

We are attempting to expand the area of prevention and intervention research and three grant applications have been submitted in this area and are under review. The first grant under review was submitted to the Canadian Cancer Society Research Institute (CCSRI) to examine the impact of the awareness of occupational exposure on workplace change initiatives. The first phase of this study will be based in Sarnia, and a second phase is planned for Sudbury. These cities have varying awareness of workplace and community exposures to potentially carcinogenic chemicals. The study will examine technological, administrative, and personal-protective equipment changes in workplaces, and will explore technological and chemical alternatives with industry. It has support from multiple organizations in Sarnia and Sudbury, including an industry-specific organization. It will be conducted in collaboration with Dr. Linn Holness at the Centre of Research Expertise in Occupational Disease (CRE-OD).

A second study that is under review is a team workplace intervention study on policies and procedures to reduce workers' exposure to sun. This is a cross-Canada, multi-workplace intervention study that is being led by Dr. Thomas Tenkate at the School of Occupational and Public Health at Ryerson University. OCRC is a major supporter of the grant proposal that was submitted as a Coalitions Linking Action & Science for Prevention (CLASP) proposal to the Canadian Partnership Against Cancer (CPAC).

The third is a study to understand factors in the environment that can facilitate standardizing the taking of occupational histories. This grant proposal was submitted to the Canadian Cancer Society Research Institute (CCSRI), and it will compare different processes in Toronto, Sarnia and London. This study will also be conducted in collaboration with Dr. Linn Holness (CRE-OD). Notification of the awarding of these grants will be in Year 5.

1.2 Surveillance of Occupational Cancers and Workplace Exposures

The OCRC conducts surveillance research to examine cancer and carcinogen exposure patterns and trends among people employed in different industries and occupations. This data can be used to set prevention priorities and to evaluate the effectiveness of previous prevention efforts. We also examine current and historical exposure levels to identify vulnerable and high risk populations to target future prevention efforts or further research. A complete list of surveillance projects may be found in Appendix 6.

Canada does not have a comprehensive occupational cancer surveillance program and OCRC is filling this important gap. OCRC received funding from the WSIB-RAC at the end of year 3 for two major surveillance proposals. One of the projects uses the linkage of the Canadian 1991 Census to the Canadian Cancer Registry, creating a database of 2.1 million people with national follow-ups through to 2009. This project, conducted in collaboration with Statistics Canada and Health Canada, allows OCRC to conduct research comparable to the Nordic cancer surveillance projects, which are acknowledged to be the best in the world. The second, smaller grant will explore the feasibility of linking WSIB lost-time claims data with the Ontario Cancer Registry to create a provincial resource to more closely examine risks in Ontario industries.

Several new projects were initiated in Year 4. A Research Advisory Council Bridging the Gap grant was awarded that will help fund the exploration of historical mining exposure data that is presently in paper form in offices and worksites across Ontario. The goal is to produce an electronic database from this data that is held by organizations such as the Ministry of Labour, the WSIB, and Workplace Safety North as well as different companies, to establish trends and patterns of exposure in the mining sector. This will help target areas in need of prevention efforts, as well as provide the tool needed for future research. The second project is an in-depth evaluation of the Ministry of Labour's Asbestos Workers Registry. This is the first comprehensive analysis of data from this long-standing registry and is being done under a cooperative agreement with the Ministry of Labour. The third project is a review of existing exposed workers registries available in Canada, the United States, and Europe, to determine their utility for surveillance and to identify optimal practices for tracking occupational exposures and diseases. This study is being done in collaboration with investigators from across the country and is funded at Memorial University through WorkSafe BC, Alberta Human Services, and Nova Scotia's WCB.

We are also analyzing data collected by the Ontario Ministry of Labour between 1981 and 1996 (using the MESU database) to determine historic patterns and trends of exposure to many known and suspected carcinogens such as tetrachloroethylene, trichloroethylene, nickel, and wood dust. As well, OCRC researchers are collaborating closely with CAREX Canada to investigate occupational exposure issues, such as determining the extent to which Ontario workers were exposed to asbestos-contaminated vermiculite from Libby, Montana.

1.3 Identification of the Causes of Cancer in the Workplace

A major focus of the OCRC is to conduct epidemiologic studies on the causes of workplace cancer. There are approximately 60 well-established workplace carcinogens, but over 100 more suspected causes in need of further research. An exciting study launched this year is on the risk of cancer among Ontario uranium miners which is funded by the Canadian Nuclear Safety Commission (CNSC). The original cohort of approximately 31,000 workers was created by CCO researchers using data from the Mining Master File and the National Dose Registry to study the effects of radon,. The CNSC is funding an extension to the national cancer follow-up and is funding OCRC to update and expand the analyses. OCRC is planning to expand its area of mining research and we hope to apply the experience that we gain with the Uranium Miners' cohort to others sectors of the mining industry in Ontario.

We are also investigating the link between pesticide exposure and cancer to determine if exposure increases the risk of Hodgkin and non-Hodgkin lymphoma, multiple myeloma, and soft tissue sarcoma using data from the Cross-Canada Study of Pesticides and Health. This research is being done in collaboration with researchers in Saskatchewan, British Columbia, and the United States. We are in the process of pooling the Canadian data with three U.S. studies to create one of the largest data sets in the world of its kind. Another example is the Centre's exploration of the causes of lung cancer using a Toronto lung cancer case-control study. The Centre is contributing data from this study to the Synergy project, a 14-country effort coordinated by the International Agency for Research on Cancer (IARC). This dataset is being used to examine the risk of cancer to many groups, such as hair dressers, welders, bricklayers, cooks, and bakers.

Other ongoing projects include the analyses of occupational exposure to diesel and gasoline emissions and the incidence of colorectal and bladder cancer, a study of the health risks among nuclear workers in Ontario who are exposed to internal sources of ionizing radiation, and the occupational risks for breast cancer among young women as part of a larger study that is exploring exposure to environmental contaminants. A complete list of epidemiologic projects is included in Appendix 7.

Strategy II: Build Researcher Capacity

The Centre has attracted an interdisciplinary group of researchers. Currently, the OCRC has a full-time staff of 11: the Director, the Associate Director, a Senior Administrative Assistant, two Senior Research Associates, and six Research Associates (see Appendix 3). The major addition in Year 4 was the hiring of Dr. Anna Koné, a senior epidemiologist and statistician from the University of Montreal, as a Senior Research Associate. Dr. Koné is taking the lead on surveillance research projects as well as mentoring staff and students.

Ann Del Bianco was promoted to Senior Research Associate this year when she successfully defended her PhD dissertation. Three other staff were promoted from student to Junior Research Associate or from Junior Research Associate to Research Associate positions: Linda Kachuri, Kris Moore, and Garthika Navaranjan. Alison McKenzie from the University of British Columbia joined the Centre as a Junior

Research Associate. Dr. Anne Harris, who completed her post-doctoral work at the Centre, successfully obtained a faculty position at Ryerson University. A full list of OCRC personnel and their activities is provided in Appendices 1-4.

A goal of the Centre is to attract students and new researchers to occupational cancer research. To this end, the Centre mentors and hosts three to five graduate students during the Summer and Winter semesters. The number of graduate students fluctuates with each semester, but in Year 4, five new students worked at the OCRC learning new analytic skills, expanding their knowledge of research methodology, being coached through the publication process, and gaining exposure to the diversity and urgent mandate of occupational cancer research (see Appendix 4).

To ameliorate the lack of in-depth background knowledge of occupational cancer and to encourage junior researchers to enter the field, the Centre conducts internal educational activities and encourages continuing education. We conduct weekly meetings with staff and students to discuss on-going projects and potential collaborations. These meetings include presentations by the Director and other scientists on relevant subjects. The Research Associates give presentations on their research projects and organize a monthly journal club where an article of interest is read and discussed. They also attend symposiums, workshops, conferences, and presentations on occupational cancer. In Year 4, the OCRC had a very strong presence at the Canadian Association for Research on Work & Health (CARWH) conference in Vancouver, and gave presentations and posters to their peers.

The OCRC also attempts to increase occupational cancer research capacity by enlisting other Canadian scientists as “affiliates” of the Centre, a status that the Centre is granting to researchers that have a more intense involvement in the Centre’s mission, over and above collaborating on a study (see Appendix 2). These affiliated scientists act as mentors to our students and junior staff and also increase the reach of the Centre beyond Cancer Care Ontario and the University of Toronto. Additions to the Centre’s list of affiliated scientist are Dr. Anne Harris and Dr. Chun-Yip Hon, both faculty members at the School of Occupational and Public Health at Ryerson University, and Dr. Victoria Arrandale, a post-doctoral fellow at the University of Alberta.

Another way that OCRC is building capacity is through stakeholder engagement. Paul Demers gives presentations on a regular basis to stakeholder audiences (see Appendix 12). He is responsive to stakeholder queries that come through the media or directly from practitioners based at the Ministry of Labour, the Canadian Cancer Society, Cancer Care Ontario, the health and safety associations, and organized labour. In the past year, he has delivered presentations on current knowledge in the field of occupational cancer, the goals of OCRC, the achievements of CAREX Canada, the IARC classification of carcinogens, the carcinogenicity of shiftwork, and the impact of asbestos on lung cancer and mesothelioma. The goal of these engagement efforts is not only to increase awareness, but also to increase collaborations and support for occupational cancer research, and to increase the capacity among stakeholders to productively use the results of research to promote prevention. A complete list of presentations delivered in Year 4 may be found in Appendix 12.

Strategy III: Outreach to Stakeholders (Knowledge Transfer & Exchange):

The Centre's KTE strategy is four fold: (1) the creation and dissemination of multiple communication products containing research-based messages; (2) the involvement of stakeholders on research projects as partners (an integrated knowledge transfer strategy); (3) the engagement of knowledge brokers to directly connect and built relationships with key decision-makers (an intensive knowledge transfer strategy); and (4) tracking the impact of the KTE initiative through a knowledge transfer evaluation framework.

3.1 Creation and dissemination of multiple communication products

The Centre is creating multiple products to communicate our research findings to stakeholder audiences. These include one-page summaries, presentations, posters, factsheets, newsletter articles, handouts, and plain-language reports.

The website is the major medium we use to profile the syntheses of OCRC's research findings to a broader audience (<http://occupationalcancer.ca>). Worth highlighting are a few major items that were recently posted on the website. In December 2012, we posted many of the media interviews that Paul Demers conducted in relation to the Centre's award of the team grant on the burden of occupational cancer, and also information on a controversial study published on the increased risk of breast cancer among workers in the plastics industry. We have also created a separate interactive website for the researchers in Canada and the U.S. who are part of the Pooled Pesticide project, and our expectation is that this project site will soon be populated. We have posted educational modules that capture some of the major messages that emerged from a workshop we held in 2012 on how the International Agency for Research on Cancer (IARC) makes decisions on the carcinogenicity of different exposures. These modules are also now available on YouTube.

Also highlighted on the website in Year 4 were two important reports. The first is: *Occupational exposure limits for carcinogens in Ontario workplaces: Opportunities to prevent and control exposures*. This report examined occupational exposure limits for 79 carcinogens in Ontario and compared them to values across Canada and in six other jurisdictions. Estimates of the number of workers exposed were drawn from CAREX Canada. We focused our discussion on the carcinogens that had limits that greatly varied across jurisdictions, and those for which the Ontario limits exceeded those of other jurisdictions. Based on this evidence, we made specific recommendations for carcinogens that can have more rigorous limits in Ontario. This report was submitted to the Ministry of Labour and is available in full on our website. The second is: *The examination of accepted workplace fatality claims within Ontario and Canada*. This study highlighted that in Ontario, occupational cancer accounted for 63% of all accepted work-related fatality claims in 2010, far surpassing the percentage of traumatic injuries and disorders (i.e., fatal burns and amputations), which reached around 23%. This report has been submitted to the *Canadian Medical Association Journal* for publication, and hence only summaries and a newsletter article have been posted on the website, rather than the full report.

In Year 4, OCRC held two very successful public events. One was a very well attended symposium on interventions to mitigate the adverse effects of shiftwork, which was co-sponsored with the Institute for

Work & Health. The audience was made up of occupational health and safety professionals, labour representatives, and industry representatives, as well as representatives from the Ministry of Labour, WSIB, CCS, and other interested organizations. The talks from the symposium, a summary of the break-out discussions, a follow-up survey of the participants, and two short reports that summarize the existing literature on shiftwork and its health effects, and what we know about selected interventions have all been posted on the website. The other was a workshop series on CAREX's occupational and environmental exposure surveillance tools that was conducted in collaboration with CAREX Canada. In Year 4, the Centre also had a significant presence at the Partners in Prevention stakeholder conference, where Paul Demers gave two presentations and we displayed four research posters. Staff also gave two presentations and created four research posters for Forum North in Sudbury. At both events, the stakeholder interest was high. For a full list of stakeholder presentations, see Appendix 12.

3.2 Integrated Knowledge Transfer

OCRC has a strong commitment to collaborative research. Most of the Centre's projects include the collaboration of researchers across Ontario, Canada, and internationally. This is a major and significant strength of the Centre. However, OCRC is also committed to bringing the users-of-research into the research process, including industry, agency, union, and representatives from the health and safety associations. For example, the cross-Canada team grant on the burden of cancer has built into its structure the full engagement of the Canadian Cancer Society (CCS) into the research process and communication of the findings.

In Year 4, four research proposals were submitted for funding that are workplace-based studies. These projects have extensive stakeholder support and involvement. One of the studies has already received funding from the Research Advisory Council and it has the Ministry of Labour's chief physician as a research partner. The second is the CLASP study on sun exposure that will have interventions in 16 workplaces across four provinces. Two grants have also been submitted to the CCS Research Institute. The notification for these awards will only be in Year 5. One of these proposals has the Mayor of Sarnia as a research partner, and the second is supported by a long list of significant community players:

- The Occupational Health Clinics for Ontario Workers
- The Office of the Worker Advisory
- The Office of the Mayor of Sarnia
- The Victims of Chemical Valley
- The Community Care Access Centre
- The Canadian Cancer Society Lambton Office
- The London Health Sciences Centre
- The Bluewater Health Unit in Sarnia
- The Princess Margaret Hospital

3.3 Intensive Knowledge Transfer

OCRC has multiple stakeholder groups who are invested in the findings of the Centre's research: industry, organized labour, workers, clinicians, physicians, and policy decision-makers. They each need evidence-based knowledge focused on their needs and their decision-making process. OCRC is very

aware that policy makers in particular can have the most significant impact on the reduction of present workplace exposures. The Centre supports the idea of having a dedicated person – a knowledge broker – engaging with key stakeholders, but unfortunately the decision to hire someone with this expertise has been postponed until future funding for the Centre has been assured.

3.4 Knowledge Transfer and Exchange Method of Evaluation (KEME)

The Centre has begun to incorporate an evaluation framework to evaluate the impact of the KTE initiatives within many of our research proposals. This will enable us to ensure that our KTE initiatives are well targeted to specific audiences, delivered by the most credible messenger, and using the most effective strategies to achieve impact. For example, the Centre is being systematic in its KTE evaluation with the new burden team grant where the evaluation framework was incorporated within the grant application.

Strategy IV: Building a Sustainable Research Centre

The final focus of OCRC's Strategic Plan is to build a sustainable research centre. This objective encompasses ensuring a smooth transition from the WSIB's Research Advisory Council to the Ministry of Labour, and ensuring ongoing core funding beyond the initial five years of funding. At the end of Year 4, Paul Demers and Desre Kramer held regular meetings with the Ministry of Labour, the Canadian Cancer Society and the Ontario Division of the Canadian Cancer Society to help facilitate the process by which a new agreement could be reached. These discussions are still ongoing although we have received strong verbal reassurance that the three major founding funders are willing to renew their mutual agreement.

Building a sustainable centre also includes actively seeking out additional partners and leveraging the core funding we receive from our three funders with additional money from academic granting institutions, government agencies, and non-governmental organizations. In Year 4, this leveraged funding came from the Canadian Institutes for Health Research, from the Workplace Safety and Insurance Board's Research Advisory Council's open-grant competitions, and from the Canadian Nuclear Safety Commission. Finally, as mentioned, OCRC received a national team grant from the Canadian Cancer Society Research Institute to assess the human and economic costs of occupational cancer in Canada. A full list of the grants received with details can be found in Appendix 8.

During Year 4 we continued to build upon our relationships with the other occupational disease research Centres funded by the WSIB/Ministry of Labour (the Centre of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD), the Centre for Research Expertise in Occupational Disease (CREOD), and the Institute for Work & Health (IWH), and with the Health and Safety Associations and the Occupational Health Clinics for Ontario Workers. We have collaborative research projects, collaborative stakeholder events, and sit on multiple committees with our research and Safety System partners.

OCRC has also deepened and broadened its institutional support within CCO and CCS. The OCRC worked to have occupational cancer research and prevention become part of the CCO strategic plan, and have strengthened our connections with other units within CCO's Prevention & Cancer Control portfolio (P&CC). This has allowed us to take advantage of CCO's strong reputation and connections to the health care community and has put us in a positive position to request additional support from CCO for OCRC's activities, particularly in the area of prevention. For example, in the fall of 2012, the Centre collaborated with the Research Unit (also within P&CC) on the occupational coding of two datasets, a case-control study and a cohort study, comprising of roughly 10,000 study participants in total. With OCRC's collaboration, the relationship between breast cancer and shiftwork and work-related physical activity will be examined. We are also involved in a few other high-profile projects with different units within P&CC. We contributed information on occupational exposures to a report on *Cancer Risk Factors in Ontario* that was led by CCO's Prevention & Surveillance unit; are involved in contributing information on occupational exposure for an on-line cancer-risk assessment tool to meet the needs of the Ministry of Health; and are involved in a Ministry of Health-requested performance measures tool. Notably, in Year 4, CCO offered OCRC additional funding to help cover staff time for these important prevention projects.

We have also deepened and broadened our relationship with the Ontario Division and the National Office of the Canadian Cancer Society. For example, the OCRC has been involved in discussions with CCS around potential support for mutual high priority activities such as toxics use reduction, and for OCRC to act as the occupational node of a national cancer prevention network funded by CCS and their partners. Paul Demers also sits on a number of meetings with the Canadian Cancer Society's Research Institute which is raising the profile of occupational cancer.

Building a sustainable Centre is more of an ongoing process than a milestone. It is a long-term goal that requires constant attention especially as the last year of the five-year funding term begins. The activities conducted by the Centre in Year 4 reflect some basic values and commitments to our funders and stakeholders. We have ensured that the Centre's expanding list of projects were served by the right number of people with the right skills and expertise and leveraged the strength of internal resources to increase capacity. We have maintained and expanded relationships to ensure that people with the right experiential and research background were attracted as collaborators on Centre research. We have ensured that the Centre's research was kept current and continues to be of interest to stakeholders to maintain the need for and the relevance of the Centre. Finally, we have developed a strong core of researchers, staff, and students with an effective infrastructure, and the number of researchers who wish to collaborate on OCRC research is increasing. Additionally, the provincial, national, and international reputation of the Centre is growing. All of these are very positive indicators of future growth and the future sustainability of this research centre that is unique in its mandate and mission.

Appendix 1: Scientists

Name	Affiliations	OCRC-related Activities
Dr. Paul Demers	<ul style="list-style-type: none"> · Director, OCRC · Senior Scientist, Cancer Care Ontario · Scientific Director, CAREX Canada · Professor, Dalla Lana School of Public Health, University of Toronto · Clinical Professor, School of Population and Public Health, University of British Columbia 	Principal Investigator for, or engaged at some level in all projects listed in Appendices 5-7
Dr. Desre Kramer	<ul style="list-style-type: none"> · Associate Director, OCRC · Staff Scientist, Cancer Care Ontario · Adjunct Professor, University of Waterloo, · Adjunct Professor, Ryerson University · Adjunct Researcher, Institute for Work & Health 	<ul style="list-style-type: none"> · Making the link between exposure and respiratory cancer in the clinical setting: What are the steps? · Assessment of the human and economic costs of occupational cancer · Awareness to behavior: Exploring the impact of awareness of workplace carcinogens in Sarnia and Sudbury · Review of compensated workplace fatality trends and patterns · Development of an Ontario workplace exposure database · Interventions mitigating health risks among shift workers: Current knowledge and workplace practices · Assessing exposure to antineoplastic drugs in Ontario healthcare workers · Sun at work: A sun safety program initiative for outdoor workers
Dr. Shelley Harris	<ul style="list-style-type: none"> · Associate Professor, Dalla Lana School of Public Health, University of Toronto · Scientist, Cancer Care Ontario 	<ul style="list-style-type: none"> · Cross-Canada study of pesticides and health · Occupational exposure to diesel and gasoline engine emissions and the incidence of colorectal and bladder cancer in Canadian men · Exposures to emerging environmental contaminants and risk of breast cancer in young women: A case-control study using biomarkers of exposure · Occupational exposure to silica and the risk of lung cancer in Canadian men · Occupational exposure to EMF and breast cancer in Canadian men
Dr. Loraine Marrett	<ul style="list-style-type: none"> · Senior Scientist and Director, Prevention and Surveillance Unit, Cancer Care Ontario · Professor, Dalla Lana School of Public Health, University of Toronto 	<ul style="list-style-type: none"> · Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: A feasibility study · Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files · Development of an occupational cancer surveillance program for Ontario · Mesothelioma patterns and projections in Ontario and Canada · Making the link between exposure and respiratory cancer in the clinical setting: What are the steps? · Cancer in Ontario risk factors report
Dr. John McLaughlin	<ul style="list-style-type: none"> · Senior Investigator, Samuel Lunenfeld Research Institute, Mount Sinai Hospital · Professor, Dalla Lana School of Public Health, University of Toronto · Research Director, Public Health Ontario 	<ul style="list-style-type: none"> · Cross-Canada study of pesticides and health · Toronto lung cancer case-control study · Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: A feasibility study · Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files · Assessing exposure to antineoplastic drugs in Ontario healthcare workers
Dr. Minh Do	<ul style="list-style-type: none"> · Epidemiologist, Public Health Agency of Canada · Research Fellow, R. Samuel McLaughlin Centre for Population Health Risk Assessment, University of Ottawa 	<ul style="list-style-type: none"> · Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: A feasibility study · Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files

Appendix 2: Affiliated Scientists

Name	Affiliation	OCRC-related Activities
Dr. Kristan Aronson	· Professor, Department of Community Health and Epidemiology and in the School of Environmental Studies, Queen's University	· Interventions mitigating health risks among shift workers: Current knowledge and workplace practices · Member of OCRC's Scientific Advisory Committee
Dr. Victoria Arrandale	· Post-Doctoral Fellow, University of Alberta	· Analyses of the Ontario MoL exposure database (MESU) · Tracking occupational diseases: an analysis of approaches for the Canadian context · Sinonasal cancer surveillance and exposure to sinonasal carcinogens in Ontario
Dr. Aaron Blair	· Scientist Emeritus and former Chief, Occupational and Environmental Epidemiology Branch of the Division of Cancer Epidemiology and Genetics, National Cancer Institute · Interim Director, OCRC, 2009-2010	· Cross-Canada study of pesticides and health · Women and minorities and other trends in occupational cancer research: An update · Systematic review of interventions for the prevention of occupational cancer · Member of OCRC's Scientific Advisory Committee
Dr. Anne Harris	· Assistant Professor, Ryerson University (beginning in November, 2012)	· Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort · Development of an occupational cancer surveillance program for Ontario · Sinonasal cancer surveillance and exposure to sinonasal carcinogens in Ontario
Dr. Chun-Yip Hon	· Assistant Professor, Ryerson University	· Analyses of the Ontario MoL exposure database (MESU) · Exposure to antineoplastic agents
Dr. Jack Siemiatycki	· Professor, Epidemiology, University of Montreal · Canada Research Chair and the Guzzo-SRC Chair in Environment and Cancer	· IARC carcinogen classification workshop · Toronto lung cancer case-control study · Member of OCRC's Scientific Advisory Committee
Dr. Paul Villeneuve	· Senior Research Scientist, Environmental Health Science and Research Bureau, Health Canada · Assistant Professor, Dalla Lana School of Public Health, University of Toronto	· Occupational exposure to diesel and gasoline engine emissions and the incidence of colorectal and bladder cancer in Canadian men · Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure · Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files · Occupational exposure to silica and the risk of lung cancer in Canadian men · Occupational exposure to electromagnetic fields and male breast cancer

Appendix 3: Research Associates

Name	Education	Projects
Dr. Ann Del Bianco (Senior Research Associate)	<ul style="list-style-type: none"> · MES (Environmental Causes of Esophageal Cancer), York University (2003) · PhD (Environmental Studies), York University (2012) 	<ul style="list-style-type: none"> · Assessment of the human and economic costs of occupational cancer · Review of compensated workplace fatality trends and patterns · Educational offerings in occupational health & safety: A survey of Canadian schools · Cancer in Ontario risk factors report · Making the link between exposure and respiratory cancer in the clinical setting: What are the steps? · Awareness to behavior: Exploring the impact of awareness of workplace carcinogens in Sarnia and Sudbury · Analysis of the Ontario asbestos workers registry
Dr. Anna Koné (Senior Research Associate)	<ul style="list-style-type: none"> · ITS (Ingenieur de Travaux Statistics) (Engineering: Statistics) School of Statistics and Applied Economy – Côte d'Ivoire (1999) · DESS (Demography) Institute of Demographic Training and Research– Cameroon (2000) · MSc (Community Health), University of Montreal (2002) · PhD (Public Health, Epidemiology), University of Montreal (2008) · Graduate Degree (Analysis and Evaluation of Health Services), University of Montreal (2010) 	<ul style="list-style-type: none"> · Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort · Development of an occupational cancer surveillance program for Ontario · Ontario Uranium Miners Cohort · Analysis of the Ontario asbestos workers registry · Sun at work: A sun safety program initiative for outdoor workers · Mesothelioma patterns and projections in Ontario and Canada
Kate Jardine	<ul style="list-style-type: none"> · MSc (Chemistry), University of Toronto (2010) 	<ul style="list-style-type: none"> · Analyses of the Ontario MoL exposure database (MESU) – exposure to nickel in Ontario, 1981-1996 · Development of an Ontario mining exposure database · Online cancer risk assessment tool · Libby sister sites in Ontario investigation · Assessment of the human and economic costs of occupational cancer · Toronto lung cancer case-control study · Creation of a database of Canadian studies that have measured exposure to workplace carcinogens
Linda Kachuri	<ul style="list-style-type: none"> · MPH (Epidemiology), University of Toronto (2012) 	<ul style="list-style-type: none"> · Cross-Canada study of pesticides and health – exposure to multiple pesticides and the risk of multiple myeloma · Linkage of 1991 Census (20% sample) with tumour registry data – Cancer in agricultural workers and others potentially exposed to pesticides · Exposures to emerging environmental contaminants and risk of breast cancer in young women · Occupational exposure to diesel and gasoline engine emissions and colorectal and bladder cancer in Canadian men · Occupational exposure to silica and the risk of lung cancer in Canadian men · Development of an occupational cancer surveillance program for Ontario
Kris Moore	<ul style="list-style-type: none"> · MA (Political Science), York University (2010) 	<ul style="list-style-type: none"> · Making the link between exposure and respiratory cancer in the clinical setting: What are the steps? · Awareness to behavior: Exploring the impact of awareness of workplace carcinogens in Sarnia and Sudbury · Assessment of the human and economic costs of occupational cancer · Analysis of the Ontario asbestos workers registry · Assessing exposure to antineoplastic drugs in Ontario healthcare workers
Garthika Navaranjan	<ul style="list-style-type: none"> · MPH (Epidemiology), University of Toronto (2012) 	<ul style="list-style-type: none"> · Cross-Canada study of pesticides and health – exposure to multiple pesticides and the risk of Hodgkin lymphoma · Analyses of the Ontario MoL exposure database (MESU) – exposure to tetrachloroethylene in Ontario, 1981-1996 · Cancer in Ontario risk factors report · Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort

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Manisha Pahwa	· MPH (Occupational and Environmental Health), University of Toronto (2011)	<ul style="list-style-type: none"> · Cross-Canada study of pesticides and health · Assessment of the human and economic costs of occupational cancer · A comparison of Ontario Occupational Exposure Limits for Carcinogens to other jurisdictions in Canada and elsewhere · Interventions mitigating health risks among shift workers: Current knowledge and workplace practices · Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort
Priyanka Raj	· MPH (Occupational and Environmental Health), University of Toronto (2010)	<ul style="list-style-type: none"> · Women and minorities and other trends in occupational cancer research: An update · Development of an Ontario mining exposure database · Libby sister sites in Ontario investigation · Assessment of the human and economic costs of occupational cancer · Creation of a database of Canadian studies that have measured exposure to workplace carcinogens · Assessing exposure to antineoplastic drugs in Ontario healthcare workers · Sun at work: A sun safety program initiative for outdoor workers
Nelson Chong (part-time)	· BSc (Toxicology), University of Toronto (1989)	<ul style="list-style-type: none"> · Development of an occupational cancer surveillance program for Ontario
Karin Hohenadel (part-time)	· MSc (Health Studies and Bioethics), University of Toronto (2007)	<ul style="list-style-type: none"> · Cross-Canada study of pesticides and health · Women and minorities and other trends in occupational cancer research: An update · Systematic review of interventions for the prevention of occupational cancer
Perry Hystad (part-time)	<ul style="list-style-type: none"> · MA (Geography), University of Victoria · PhD (Epidemiology) University of British Columbia (2013) 	<ul style="list-style-type: none"> · Online cancer risk assessment tool · Development of cancer prevention and risk factor indicators for the Prevention Performance Measurement Framework (PPMF) · Development of regional priorities for occupational cancer in Ontario · Mesothelioma patterns and projections in Ontario and Canada
Alison McKenzie (part-time)	· MSc (Occupational and Environmental Hygiene), University of British Columbia (2012)	<ul style="list-style-type: none"> · Online cancer risk assessment tool

Appendix 4: Students and Trainees Supervised

Student Name	Program Type	Date	Principal Supervisor	Project
Eliane Kim	MPH Practicum, Epidemiology, Dalla Lana School of Public Health (DLSPH), U of T	Jan-May 2013	Paul Demers	· Linkage of 1991 Census (20% sample) with tumour registry data – Cancer due to occupational exposure to wood dust
Jasmik Saini	MPH Practicum, Epidemiology, DLSPH, U of T	Jan-May 2013	Paul Demers	· Linkage of 1991 Census (20% sample) with tumour registry data – Cancer in miners
Ann Grundy	Post-Doctoral Fellowship, Cancer Care Ontario	Sept 2012-present	Shelley Harris	· Occupational exposure to electromagnetic fields and the risk of male breast cancer in Canada
Marcella Jones	MPH Practicum, Epidemiology, DLSPH, U of T	May-Aug 2012	Paul Demers	· Linkage of 1991 Census (20% sample) with tumour registry data – Whole body vibration and prostate cancer
Trevor van Ingen	MPH Practicum, Epidemiology, DLSPH, U of T	May-Aug 2012	Paul Demers	· Linkage of 1991 Census (20% sample) with tumour registry data – Cancer in electrical utility workers
Linda Kachuri	MPH Practicum, Epidemiology, DLSPH, U of T	Jan-Aug 2012	Shelley Harris / Paul Demers	· Cross-Canada Study of Pesticides – exposure to multiple pesticides and the risk of multiple myeloma · Linkage of 1991 Census (20% sample) with tumour registry data – Cancer in agricultural workers and others potentially exposed to pesticides · Occupational exposure to crystalline silica and the risk of lung cancer in men · Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure
Desiree Latour	MPH Practicum, Epidemiology, DLSPH, University of Toronto	Jan-May 2012	Paul Demers	· Toronto Lung Cancer Case-Control Study – occupations and the risk of lung cancer
Renata Musa	MPH Practicum, Occupational and Environmental Health, DLSPH, U of T	2012-present	Shelley Harris	· Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure
Joanne Kim	MPH Masters Project, Occupational and Environmental Health, DLSPH, U of T	July 2011-May 2013	Paul Demers	· Analyses of the Ontario MoL exposure database (MESU) and assessment of the human and economic costs of occupational cancer related to diesel engine exhaust
Jill Hardt	MPH Practicum, Epidemiology, DLSPH, U of T	May 2011-Aug 2012	Paul Demers	· Toronto Lung Cancer Case-Control Study · Linkage of 1991 Census (20% sample) with tumour registry data – lung cancer in welders
Garthika Navaranjan	MPH Practicum, Epidemiology, DLSPH, U of T	May 2011-Aug 2012	Paul Demers / Shelley Harris	· Cross-Canada Study of Pesticides – exposure to multiple pesticides and the risk of Hodgkin lymphoma · Analyses of the Ontario MoL exposure database (MESU) – exposure to tetrachloroethylene in Ontario, 1981-1996

Appendix 5: Intervention, Prevention, Systematic Reviews, and Other Projects

Project	Broad Objectives	OCRC Team and Collaborators	Funder, Budget and Timeline	Accomplishments/plans thus far for 2012-2013
Assessment of the human and economic costs of occupational cancer	To raise awareness of the human and economic impacts of exposure to occupational carcinogens to promote voluntary prevention activities in industry, and support regulation actions	<i>Staff:</i> Ann Del Bianco, Manisha Pahwa, Priyanka Raj, Kris Moore, Kate Jardine <i>Students:</i> Joanne Kim <i>Scientists:</i> Paul Demers (PI), Desre Kramer (co-PI) <i>Collaborators:</i> Hugh Davies, Anne-Marie Nicol, Cheryl Peters (UBC), Emile Tompa (IWH), Doug Hyatt (Rotman School, UT), Sarah Bouma (CCS), France Labreche (IRSST), Jerome Lavoue (UM), Patrick Curley (AHS), Lesley Rushton (Imperial College, London)	Initially core funded Team Grant awarded by CCSRI for \$1,000,000 2012-2016	<ul style="list-style-type: none"> Project launched An initial study of diesel engine exhaust, which establishes a framework for future analyses, is nearing completion Webinar with Canadian Cancer Society (over 100 people) to discuss project Ongoing discussions with the Canadian Cancer Society on future knowledge transfer dissemination to wider audience
Interventions mitigating health risks among shift workers: Current knowledge and workplace practices	To evaluate the current state of scientific knowledge and workplace practices about interventions to prevent illness and injury related to shift work through a stakeholder survey, systematic review, and symposium	<i>Staff:</i> Manisha Pahwa <i>Scientists:</i> Paul Demers (PI), Kristan Aronson (Co-I), Desre Kramer <i>Collaborators:</i> Cam Mustard (IWH, Co-I), Ron Saunders (IWH), Carolyn Gotay (UBC), Sarah Neil (UBC)	WSIB RAC \$52,250 Complete December 2012	<ul style="list-style-type: none"> Report on stakeholder survey of 500 respondents completed, published on web Systematic literature review of interventions completed and manuscript in preparation Stakeholder symposium held on November 6, 2012 (100 participants) Presentation at Forum North in Nov 2012 <i>At Work</i> newsletter article
Awareness to behavior: Exploring the impact of awareness of workplace carcinogens in Sarnia and Sudbury	To determine what policies and practices to reduce workers' exposure to toxins are economically feasible and effective, and what are the barriers to change	<i>Staff:</i> Kris Moore, Ann Del Bianco <i>Scientists:</i> Desre Kramer (Co-PI) <i>Collaborators:</i> Linn Holness (Co-PI), Irena Kudla (St. Michael's Hospital), Mike Bradley (Mayor of Sarnia)	Application submitted for CCSRI Knowledge to Action grant for \$120,000 2013	<ul style="list-style-type: none"> Awaiting funding decision Meetings with stakeholder groups in Sarnia
Sun at work: A sun safety program initiative for outdoor workers	A cross-Canada workplace intervention study to investigate the feasibility of reducing workers' exposure to UV radiation and heat stress and create workplace-centred programs, policies and procedures	<i>Staff:</i> Anna Koné, Priyanka Raj <i>Scientists:</i> Desre Kramer (co-PI), Paul Demers <i>Collaborators:</i> Thomas Tenkate (PI) Ryerson University, Linn Holness (CRE-OD)	Application submitted to CPAC for their CLASP grant for \$1,000,000 2013	<ul style="list-style-type: none"> Awaiting funding decision Organizing a researcher meeting to finalize the methodology

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Making the link between exposure and respiratory cancer in the clinical setting: What are the steps?	Study to investigate three different processes that can facilitate workers receiving work histories in clinical settings in Toronto, London and Sarnia	<p><i>Staff:</i> Kris Moore, Ann Del Bianco</p> <p><i>Scientists:</i> Desre Kramer, Loraine Marrett (Co-PI)</p> <p><i>Collaborators:</i> Linn Holness (Co-PI), Irena Kulda (St. Michael's Hospital), John Oudyk (OHCOW), Mike Bradley (Mayor of Sarnia)</p>	<p>Initial pilot study funded by WSIB RAC (\$27,160)</p> <p>Application for provincial roll-out submitted to CCSRI Innovation Grant competition for \$100,000</p> <p>2013/2014</p>	<ul style="list-style-type: none"> · Pilot study at Juravinski completed in 2012 · Results of pilot study presented at CARWH 2012 · Report submitted to WSIB · Manuscript in preparation · Preliminary plans for broader provincial roll-out of project underway, pending funding decisions · Meetings held with stakeholder supporters in Sarnia and London and clinical workers at Princess Margaret Hospital in Toronto
Development of regional priorities for occupational cancer in Ontario	To determine priorities for interventions to prevent occupational cancer at a regional level in Ontario	<p><i>Staff:</i> Perry Hystad</p> <p><i>Scientists:</i> Paul Demers</p>	CCO Prevention funding 2012-2014 for several projects	<ul style="list-style-type: none"> · Search for funding opportunities underway · Initial plan developed to compare regional-level industry employment levels to carcinogen output based on the National Pollutant Release Inventory
Development of cancer prevention and risk factor indicators for the Prevention Performance Measurement Framework (PPMF)	Explore the development of cancer prevention and risk factor indicators under the CSQI framework	<p><i>Staff:</i> Perry Hystad</p> <p><i>Scientists:</i> Paul Demers</p>		<ul style="list-style-type: none"> · Perry Hystad participated in CEC meeting on health indicators & vulnerable communities · Examples of occupational indicators developed for the project
Online cancer risk assessment tool	To create the occupational module of an online tool for assessing cancer risk	<p><i>Staff:</i> Alison McKenzie, Kate Jardine, Perry Hystad</p> <p><i>Scientists:</i> Paul Demers</p>		<ul style="list-style-type: none"> · OCRC is adding an occupational portion to the online risk assessment tool · Prototype developed and presented to the Ministry of Health
A comparison of Ontario Occupational Exposure Limits for Carcinogens to other jurisdictions in Canada and elsewhere	<p>To raise awareness regarding occupational exposure limits in Ontario</p> <p>To prepare a submission to the MoL's annual OEL Update Project</p>	<p><i>Staff:</i> Manisha Pahwa</p> <p><i>Scientist:</i> Paul Demers</p> <p><i>Collaborators:</i> Cheryl Peters, Calvin Ge (CAREX Canada)</p>	Core funding Completed in 2012	<ul style="list-style-type: none"> · Recommendations submitted to MoL · Final report completed
Review of compensated workplace fatality trends and patterns	Update of the 2006 "5 Deaths a Day Report" focusing on compensated cancer fatalities to raise awareness regarding the importance of workplace cancer	<p><i>Staff:</i> Ann Del Bianco</p> <p><i>Scientists:</i> Paul Demers, Desre Kramer</p>	Core funded Completed in 2012	<ul style="list-style-type: none"> · CCO Cancer Fact completed · <i>At Work</i> newsletter article completed and brochure prepared for Day of Mourning · Results presented at CARWH 2012, Partners in Prevention, & Forum North · Manuscript submitted for publication
Cancer in Ontario risk factors report	<p>To provide a summary of the epidemiologic evidence linking risk factors to common cancers</p> <p>To raise awareness of occupational cancer in the health care and cancer communities</p>	<p><i>Staff:</i> Garthika Navaranjan, Ann Del Bianco</p> <p><i>Students:</i> Joanne Kim</p> <p><i>Scientists:</i> Paul Demers, Loraine Marrett</p> <p><i>Collaborators:</i> Elisa Candido, Beth Theis (CCO Surveillance Unit)</p>	CCO and core funding Completed in 2013	<ul style="list-style-type: none"> · OCRC examined the occupational and environmental risk factors · Report was released January 2013 · Poster was presented at the Ontario Public Health Convention

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Assessing exposure to antineoplastic drugs in Ontario healthcare workers: A pilot study at the Juravinski Cancer Centre	To study exposure to anti-neoplastic agents and explore the feasibility of conducting long-term surveillance of exposed healthcare workers	<i>Staff:</i> Kris Moore, Priyanka Raj, Ann Del Bianco <i>Scientists:</i> Paul Demers, Desre Kramer, John McLaughlin (Lunenfeld)	Initial funding by Juravinski for pilot work and questionnaire \$50,000 (tentative) 2012/13	<ul style="list-style-type: none"> · Ethics application approved by Hamilton Health Sciences · Presentation made to Juravinski staff and management · Decision was made not to proceed with this study until labour disputes are resolved · This project remains a strong possibility
Educational offerings in occupational health & safety: a survey of Canadian schools	A review of graduate and undergraduate programs across Canada to identify strengths and gaps in academic training	<i>Staff:</i> Ann Del Bianco <i>Scientists:</i> Paul Demers <i>Collaborators:</i> Vernon Curran, Stephen Bornstein (MUN), Karen Bartlett, Hugh Davies (UBC)	\$49,000 from Worksafe BC with WCB of NS and Alberta Human Services. Funds held at MUN. 2012-2013	<ul style="list-style-type: none"> · Review of educational offerings completed · Report in preparation
Systematic review of interventions for the prevention of occupational cancer	To identify whether the impact of interventions on cancer rates can be documented using epidemiologic studies	<i>Scientists:</i> Aaron Blair (PI), Paul Demers <i>Collaborators:</i> Karin Hohenadel (PHO), Kurt Straif (IARC)	Core funding Completed asbestos in 2012	<ul style="list-style-type: none"> · Manuscript for asbestos submitted for publication

Appendix 6: Surveillance of Occupational Cancer and Carcinogens

Project	Broad Objectives	OCRC Team and Collaborators	Funder, Budget and Timeline	Accomplishments/Plans Thus Far
Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort Initial areas of interest include: · Lung cancer in welders · Occupations & ovarian cancer · Cancer in wood workers · Cancer in firefighters & police · Shiftwork & cancer · Cancer in agricultural workers · Occupational physical activity and colorectal cancer	To create a platform that would allow the study of new and existing questions on occupational cancer	<i>Staff:</i> Anna Koné, Linda Kachuri, Garthika Navaranjan, Manisha Pahwa <i>Students:</i> Elaine Kim, Jasmik Saini, Jill Hardt, Marcella Jones, Trevor van Ingen <i>Scientists:</i> Paul Demers, Anne Harris <i>Collaborators:</i> Michael Tjepkema, Paul Peters (Statistics Canada), CAREX Canada, Nordic Occupational Cancer Group, Rick Burnett (Health Canada)	Linkage funded by CIHI and Health Canada OCRC funded by the WSIB-RAC \$312,570 2012-2015	· Initial round of feasibility work/pilot analyses completed · Paper on welders, ovarian cancer, mining, agriculture, and wood dust in preparation · Results on firefighters presented at CARWH · Presented on the data linkage at NAACCR · Ovarian cancer and occupation presented at Society of Gynecologic Oncology meeting · Analysis of occupational physical activity and colorectal cancer and shiftwork and cancer in progress · Analyses by exposure using MESU & CAREX being explored · Extended follow-up of cohort to 2009 underway
Development of an occupational cancer surveillance program for Ontario	To create a new occupational surveillance platform based only on Ontario data	<i>Staff:</i> Anna Koné, Linda Kachuri, Nelson Chong <i>Scientists:</i> Paul Demers, Loraine Marrett, Anne Harris	Funded by WSIB RAC \$29,800 2012-2014	· Ethics completed · Data access permissions granted · All data obtained and cleaned
Development of an Ontario mining exposure database	To find sources of mining exposure data in Ontario and create a database so that the data can be analyzed for surveillance and prevention purposes	<i>Staff:</i> Kate Jardine, Priyanka Raj <i>Scientists:</i> Paul Demers (PI), Desre Kramer <i>Collaborators:</i> Leon Genesove (Ministry of Labour), Andy King (Steelworkers Union)	WSIB RAC/MoL \$59,406 2013	· Engaging stakeholders in Sudbury, North Bay and Elliot Lake · Collaborative agreement with MoL developed · Discussions initiated with Workplace Safety North and Laurentian University for data sharing
Analysis of the Ontario asbestos workers registry	To examine patterns and trends of worker registrations and evaluate the registry as a tool for surveillance	<i>Staff:</i> Anna Koné, Ann Del Bianco, <i>Scientists:</i> Paul Demers, Victoria Arrandale	Core funding 2012-2013	· Database cleaned · Analyses completed · Report in preparation · Abstract accepted at CSEB 2013 meeting
Tracking occupational diseases: an analysis of approaches for the Canadian context	A review of existing exposed workers registries in Canada, the US, and Europe to determine their utility for surveillance and identify optimal practices	<i>Scientists:</i> Victoria Arrandale, Paul Demers <i>Collaborators:</i> Stephen Bornstein, Barbara Nies (MUN), Chris McLeod, Mieke Koehoorn (UBC)	\$49,000 from Worksafe BC with Nova Scotia WCB and Alberta Human Services. Funds held at MUN. 2012-2013	· Final report in preparation

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Analyses of the Ontario MoL exposure database (MESU)	<p>To examine historical patterns of exposure to carcinogens in Ontario</p> <p>To use this data in collaboration with CAREX to create exposure matrixes that can be used for cancer surveillance and research</p>	<p><i>Staff:</i> Kate Jardine, Garthika Navaranjan</p> <p><i>Scientists:</i> Paul Demers (PI), Victoria Arrandale</p> <p><i>Collaborators:</i> Cheryl Peters (CAREX Canada)</p>	<p>CAREX Canada and core funding</p> <p>Ongoing analyses</p>	<ul style="list-style-type: none"> Analyses using MESU dataset in progress Reports on exposure to carcinogens in Ontario (1981-1996) in progress: wood dust and school teachers; tetrachloroethylene; trichloroethylene; nickel Creation of exposure matrixes for use with 1991 Census and Burden projects in progress
Libby sister sites in Ontario investigation	To identify sites where asbestos-contaminated vermiculite was shipped in Ontario	<p><i>Staff:</i> Priyanka Raj, Kate Jardine</p> <p><i>Scientist:</i> Paul Demers</p> <p><i>Collaborators:</i> Cheryl Peters, Alejandro Cervantes (CAREX Canada)</p>	<p>Core funding</p> <p>Complete in 2013</p>	<ul style="list-style-type: none"> Database acquired from US EPA by CAREX Canada and sent to OCRC Receiving sites identified and investigated Sites in Ontario mapped Report relevant for public health units in preparation
Sinonasal cancer surveillance and exposure to sinonasal carcinogens in Ontario and British Columbia	To examine the descriptive epidemiology of sino-nasal cancer in relation to trends in exposure in Ontario and British Columbia	<p><i>Scientists:</i> Paul Demers (PI), Victoria Arrandale, Anne Harris</p> <p><i>Collaborators:</i> Chris McLeod, Mieke Koehoorn, Cheryl Peters (University of British Columbia)</p>	<p>Core funding</p> <p>Completed in 2012</p>	<ul style="list-style-type: none"> Project completed - analysis of tumour registry data complete Analysis of MESU exposure data complete Comparison with parallel project in BC completed Presented at CCRA research conference
Mesothelioma patterns and projections in Ontario and Canada	To map patterns of mesothelioma incidence in Ontario and predict future trends	<p><i>Staff:</i> Anna Koné, Perry Hystad</p> <p><i>Scientists:</i> Loraine Marrett (Co-PI), Paul Demers</p> <p><i>Collaborators:</i> Mark Clements (Australian National University)</p>	<p>Core funding</p> <p>Complete in 2012</p>	<ul style="list-style-type: none"> Updated maps of mesothelioma created Maps of lung cancer and some historical sources of asbestos exposure also created Manuscript in preparation
Creation of a database of Canadian studies that have measured exposure to workplace carcinogens	<p>To contribute to CAREX to help fill in gaps in our knowledge of exposure in Canada</p> <p>To develop a database of Canadian studies for the Burden project and other uses</p>	<p><i>Staff:</i> Kate Jardine, Priyanka Raj</p> <p><i>Scientist:</i> Paul Demers</p> <p><i>Collaborators:</i> Calvin Ge, Cheryl Peters (CAREX Canada)</p>	<p>Core funding</p> <p>Complete in 2012</p>	<ul style="list-style-type: none"> Database finalized except for French language publications Poster presented at CARWH 2012
Cancer Among Nordic Firefighters	To collaborate with the NOCCA Study Group on a topic of mutual interest	<p><i>Scientists:</i> Paul Demers</p> <p><i>Collaborators:</i> Nordic Occupational Cancer Group, Finnish Institute for Occupational Health</p>	<p>Core funded</p> <p>Complete in 2012</p>	<ul style="list-style-type: none"> Results presented at EPICOH Manuscript submitted to Int J Cancer

Appendix 7: Identification of Causes of Cancer in the Workplace

Project	Broad Objectives	OCRC Team and Collaborators	Funder, Budget and Timeline	Accomplishments/Plans Thus Far
Ontario uranium miner cohort: Re-analysis after linkage with national mortality and cancer incidence files	To continue to assess the risk of cancer, as well as cardiovascular disease among 26,000 Ontario uranium miners	<i>Staff:</i> Garthika Navaranjan, Anna Koné <i>Scientists:</i> Paul Demers (PI), Loraine Marrett, Minh Do, Paul Villeneuve, John McLaughlin <i>Collaborators:</i> CNSC	Linkage directly funded by Canadian Nuclear Safety Commission \$150,000 to OCRC for analysis 2013-2014	· Linkage completed at Statistics Canada · Analyses under way
Cross-Canada study of pesticides and health · The effects of multiple pesticides in combination on cancer risk · Pooled analyses with similar studies from US National Cancer Institute	To examine the risk of non-Hodgkin lymphoma, Hodgkin lymphoma, multiple myeloma, and soft tissue sarcoma associated with exposure to specific pesticides and combinations of pesticides	<i>Staff:</i> Manisha Pahwa, Garthika Navaranjan, Linda Kachuri <i>Scientists:</i> Shelley Harris (PI), Paul Demers, John McLaughlin, Aaron Blair <i>Collaborators:</i> John Spinelli (BC Cancer Agency), Punam Pahwa & James Dosman (Univ. of Sask.), Laura Beane-Freeman (US NCI)	Core funding for analyses at OCRC Pooled data set creation funded by US NCI Multiple projects with ongoing analyses	· Symposium held at CARWH 2012 meeting · NHL, pesticides, & immunologic conditions paper by Manisha Pahwa published in 2012 · MM pesticides analysis manuscript by Linda Kachuri published in 2013 · HL pesticides paper by Garthika Navaranjan accepted for publication · Pooled analyses with US studies in progress
Toronto lung cancer case-control study · Analyses of a lung cancer case-control dataset with information on occupational risk factors and smoking history · Contribution of the Toronto data to the international SYNERGY pooled lung cancer case-control study coordinated by IARC	Examine associations within the Toronto dataset SYNERGY: create a massive dataset to: · examine dose-response relationships · synergistic effects of multiple carcinogens and smoking · examine associations with suspected carcinogens · Possible analysis of pooled SYNERGY data by OCRC researchers	<i>Staff:</i> Kate Jardine <i>Scientists:</i> John McLaughlin (co-PI), Paul Demers (co-PI) <i>Collaborators:</i> Ann Olsson, Kurt Straif (IARC), Hans Kromhout, Roel Vermeulen (Utrecht University), other European collaborators from Germany, France, Italy, the UK, Sweden, Poland, and the Netherlands	Toronto Analyses: Core funding Pooled data set creation and analyses funded by IARC Ongoing analyses Possible future analyses of the SYNERGY pooled data	· Poster by Jill Hardt presented at the International X2012 meeting · Collaborate with international investigators on pooled analyses: · Paper on lung cancer & hairdressers (in press) · Papers on lung cancer in welders, bakers, and bricklayers (submitted) · Paper on effect modification of cigarette smoking & lung cancer (submitted) · Papers on lung cancer in cooks and in firefighters (in preparation)
Occupational exposure to diesel and gasoline engine emissions and the incidence of colorectal and bladder cancer in Canadian men	To use the National Enhanced Cancer Surveillance System Data to examine the risk of cancer associated with sites other than the lung	<i>Staff:</i> Linda Kachuri <i>Scientists:</i> Shelley Harris (PI), Paul Villeneuve <i>Collaborators:</i> Kenneth Johnson (PHAC), Marie-Elise Parent (Institut national de la recherche scientifique (INRS), Quebec)	WSIB RAC \$160,880 2010-2014	· Shelley Harris is leading this study from CCO's Research Unit · Data transfer from PHAC to INRS complete · INRS is coding occupational exposures and statistical analysis will begin in June/July 2013

Continued – Appendix 7				
Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: A feasibility study	To assess the feasibility of an epidemiological study of nuclear workers in Ontario who have been exposed to ionizing radiation from internal emitters	<i>Staff:</i> Garthika Navaranjan, Anna Koné <i>Scientists:</i> Minh Do (Co-PI), Loraine Marrett (Co-PI), John McLaughlin, Paul Demers <i>Collaborators:</i> Elisabeth Cardis (CREAL, Barcelona)	WSIB RAC \$28,825 Completed in 2013	<ul style="list-style-type: none"> · Feasibility study completed · Final report submitted and under review at WSIB
Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure	To examine the association between occupational exposure and the risk breast cancer among women aged 18-39	<i>Staff:</i> Linda Kachuri <i>Scientists:</i> Shelley Harris (PI), Paul Villeneuve <i>Collaborators:</i> Michelle Cotterchio, Gil Valencia (CCO), Len Ritter (University of Guelph), Julia Knight (U of T)	CCSRI \$846,000 2011-2014	<ul style="list-style-type: none"> · Shelley Harris is leading this study from CCO's Research Unit · Ethics have been approved · Online questionnaires have been developed and biological sampling, analysis, and storage protocols are in place · Case control recruitment has begun
Occupational exposure to silica and the risk of lung cancer in Canadian men	To use the National Enhanced Cancer Surveillance System data to examine the risk of lung cancer associated with occupational exposure to crystalline silica	<i>Staff:</i> Linda Kachuri <i>Scientists:</i> Shelley Harris (PI), Paul Villeneuve <i>Collaborators:</i> Kenneth Johnson (Public Health Agency of Canada), Marie-Elise Parent (Institut Armand Frappier, INRS, Quebec)	Core funding 2012-2013	<ul style="list-style-type: none"> · Data have been transferred to CCO · Data analysis completed · Abstract accepted at the International Society for Environmental Epidemiology · Manuscript in preparation
Occupational exposure to electromagnetic fields and the risk of male breast cancer in Canada	To use the National Enhanced Cancer Surveillance System data to study male breast cancer and electromagnetic fields	<i>Post-Doctoral Researcher:</i> Anne Grundy <i>Scientists:</i> Shelley Harris (PI), Paul Villeneuve, Paul Demers	Core funding 2012-2013	<ul style="list-style-type: none"> · Data have been transferred to CCO · Data analysis completed · Abstract accepted at the International Society for Environmental Epidemiology · Manuscript in preparation
Women and minorities and other trends in occupational cancer research: An update	To examine major trends in occupational epidemiology research To develop a database of Canadian studies for the Burden project and other uses	<i>Staff:</i> Priyanka Raj <i>Scientists:</i> Aaron Blair (PI), Paul Demers <i>Collaborators:</i> Sheila Hoar Zahm (U.S. National Cancer Institute) Karin Hohenadel (PHO)	Core funding Completed in 2012	<ul style="list-style-type: none"> · Manuscript on trends in occupational cancer research has been submitted · Manuscript on the inclusion of women in occupational cancer research has been submitted

Appendix 8: Grants

Table 1: Grants housed at OCRC

Research Project	Funder	Principal Investigator(s)	Co-Investigators(s)	Budget	Timeline
The Human and Economic Burden of Occupational Cancer in Canada	Canadian Cancer Society Research Institute	<u>Demers PA</u>	Davies H, Tompa E, <u>Kramer D</u> , Nicol AM, Lavoué J, Labreche F, Curly P, Rushton L, Hyatt D, McLeod C, Bouma S, Di Nardo J, Peters CE, <u>Del Bianco A</u> , <u>Pahwa M</u>	\$1,000,000	2012-2016
Occupational Cancer Surveillance using the 1991-2006 Canadian Census Mortality & Cancer cohort	WSIB RAC	<u>Demers PA</u>	<u>Harris A</u>	\$312,570	2012-2015
Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files	Canadian Nuclear Safety Commission	<u>Demers PA</u>	<u>Do M</u> , <u>Harris SA</u> , <u>Marrett LD</u> , <u>Villeneuve P</u> , Members of the National Uranium Miners Working Group	\$150,000	2013-2014
Development of an Ontario mining exposure database	WSIB RAC	<u>Demers PA</u>	Genesove L	\$59,406	2013-2014
Pooled analyses of pesticides, agricultural exposures and select cancers: Developing research priorities and disseminating knowledge with stakeholders	Canadian Institutes of Health Research	<u>Harris SA</u>	<u>Pahwa M</u> , Beane-Freeman L, <u>Kramer D</u> , <u>Demers PA</u> , <u>Blair A</u> , Spinelli JJ	\$25,000	2013-2014
Surveillance of occupational cancer through linkage of WSIB data to Ontario Cancer Registry	WSIB RAC	<u>Demers PA</u>	<u>Harris A</u> , Koehoorn M, McLeod C	\$29,800	2012-2014
Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure	Canadian Cancer Society Research Institute	<u>Harris SA</u>	Cotterchio M, Knight J, Ritter L, <u>Villeneuve P</u>	\$846,000	2011-2014
Occupational exposure to diesel and gasoline engine emissions and the incidence of colorectal and bladder cancer in Canadian men	WSIB RAC	<u>Harris SA</u>	<u>Villeneuve P</u> , Johnson K, Parent M	\$160,880	2010-2014
Interventions mediating health risks among shift workers: Current knowledge and workplace practices	WSIB RAC	<u>Demers PA</u>	Mustard C, <u>Aronson K</u>	\$52,250	2011-2013
Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: A feasibility study	WSIB RAC	<u>Marrett LD</u> , <u>Do M</u>	<u>McLaughlin J</u> , <u>Demers PA</u> , Cardis E	\$28,825	2011-2013
Classification of Carcinogens Grant (Occupational Cancer Research Day: From Research to Policy and Prevention)	Canadian Institutes for Health Research	<u>Demers PA</u>	<u>Siemiatycki J</u> , Ritter L	\$19,160	2011-2013
Making the link between exposure and respiratory cancer in the clinical setting: What are the steps?	WISB RAC	<u>Marrett LD</u> , <u>Holness L</u>	<u>Hohenadel K</u> , Kudla I, Oudyk J	\$27,160	2011-2012

Table 2: Grants pending

Research Project	Funder	Principal Investigator(s)	Co-Investigators(s)	Budget	Timeline
Making the link from diagnosis to work-relatedness to compensation: evaluating a process to help workers with occupational cancer submit a claim to workers' compensation in three cities	Canadian Cancer Society Research Institute	<u>Kramer D</u> , Holness L	Kudla I, <u>Moore K</u> , Bradley M	\$100,000	Pending (2013-2014)
Sun at Work: A sun safety program initiative for outdoor workers	Canadian Partnership Against Cancer: Coalitions Linking Action and Science for Prevention 2 (CLASP2) competition	Tenkate T	Strahlendorf P, <u>Kramer D</u> , Holness L, Curley P, Green PJ, Marsh B, Wilson K, Barnard K	\$2,209,531	Pending (2013-2016)
The Risk of Cancer Amongst Canadian Miners	Canadian Cancer Society private funding through SR&ED investment	<u>Demers PA</u>	<u>Kramer D</u>	Pending	Pending
From awareness to behavior change: exploring the impact of heightened awareness of workplace carcinogens in Sarnia	Canadian Cancer Society Research Institute	<u>Kramer D</u> , Holness L	Kudla I, <u>Del Bianco A</u>	\$200,000	Pending (2013-2015)
Building capacity to develop national CARcinogen EXposure (CAREX) projects in Latin America and the Caribbean	International Development Research Centre	<u>Demers PA</u>	Nicol AM, Rodriguez Guzman J, Espinosa Restrepo MT	Pending	Pending

Table 3: Grants housed outside of OCRC

Research Project	Funder	Principal Investigator(s)	Co-Investigators(s)	Budget	Timeline
CAREX Canada	Canadian Partnership Against Cancer	Davies H (UBC), Nicol AM (CAREX Canada)	<u>Demers PA</u>	\$600,000	2012 -2017
Educational offerings in occupational health & safety: a survey of Canadian schools	Worksafe BC with WCB of Nova Scotia and Alberta Human Services	Curran V (Memorial University of Newfoundland)	Bartlett K (UBC), Bornstein S (Memorial), Davies H (UBC), <u>Demers PA</u> , and others	\$49,381	2012-2013
Tracking occupational diseases: an analysis of approaches for the Canadian context	Worksafe BC with WCB of Nova Scotia and Alberta Human Services	Bornstein S (Memorial University of Newfoundland)	<u>Demers PA</u> , Koehoorn M (UBC), McLeod C (UBC), Oudyk J (OHCOW), and others	\$49,321	2012-2013
Sun safety behaviors among construction workers: An initiative for skin cancer prevention	Canadian Dermatology Foundation	Koehoorn M (UBC)	Peters C (UBC, CAREX Canada), <u>Demers PA</u> , Nicol AM (CAREX Canada), <u>Marrett LD</u>	\$30,000	2012-2013
Advanced spatial analyses to characterize environmental impacts on cancer risk: Phase 1	Cancer Research Society, Quebec	<u>McLaughlin JR</u>	<u>Harris SA</u> , Holowaty E (Dalla Lana School of Public Health)	\$120,000	2011-2013
Capacity Development for a Canadian Workplace Exposure Database	Workers Compensation Board of Manitoba	Davies H (UBC)	<u>Demers PA</u> , Nicol A (CAREX Canada)	\$88,466	2011-2013
Translating environmental health surveillance data for cancer prevention & policy development	Canadian Institutes for Health Research	Nicol AM (CAREX Canada)	<u>Demers PA</u> , Davies H (UBC)	\$98,980	2011-2012
Seeking compensation for mesothelioma	Worksafe BC	Koehoorn M (UBC)	McLeod C (UBC), Lee C (BCCA), <u>Demers PA</u>	\$50,000	2011-2012
Capacity Development for a Canadian Workplace Exposure Database	Worksafe BC	Davies H (UBC)	<u>Demers PA</u> , Nicol AM (CAREX Canada)	\$140,327	2010-2012
Capacity Development for a Canadian Workplace Exposure Database	Saskatchewan Workers' Compensation Board	Davies H (UBC)	<u>Demers PA</u> , Nicol AM (CAREX Canada)	\$65,421	2010-2012
Evaluation of a Workplace-level MSD-Prevention Knowledge Transfer Intervention, and the Creation of an on-line MSD Prevention Planning Tool	WSIB RAC	<u>Kramer D</u>	Bigelow P, Aversa T, Steenstra I, McMillan K, Wells R, Naqvi S, Van Eerd D	\$134,292	2012-2013

Appendix 9: Peer-Reviewed Publications

Published and Accepted Manuscripts

1. [Navaranjan G](#), [Hohenadel K](#), [Blair A](#), [Demers PA](#), Spinelli JJ, Pahwa P, [McLaughlin JR](#), Dosman JA, Ritter L, [Harris SA](#). Exposures to multiple pesticides and the risk of Hodgkin lymphoma in Canadian men. *Cancer Causes & Control* (in press May 2013).
2. Olsson AC, Xu Y, Schüz J, Vlaanderen J, Pesch B, Kendzia B, Stücker I, Guida F, Bröske I, Wichmann HE, Consonni D, Landi MT, Caporaso N, Tse LA, Tak-sun Yu I, Siemiatycki J, Lavoué J, Mirabelli D, Richiardi L, Simonato L, Gustavsson P, Plato N, Jöckel KH, Ahrens W, Pohlmann H, Tardón A, Zaridze D, Marcus MW, 't Mannetje A, Pearce N, [McLaughlin J](#), [Demers PA](#), Szeszenia-Dabrowska N, Lissowska J, Rudnai P, Fabianova E, Stanescu Dumitru R, Bencko V, Foretova L, Janout V, Boffetta P, Benhamou S, Fortes C, Bueno-de-Mesquita B, Peters S, Vermeulen R, Kromhout H, Brüning T, Straif K. Lung cancer risk among hairdressers – a pooled analysis of case-control studies conducted between 1985 and 2010. *American Journal of Epidemiology* (in press April 2013).
3. Hystad P, [Demers PA](#), Johnson KC, Brauer M. Long-Term Exposure to Air Pollution and Lung Cancer Risk: A Population-based Case-Control Study in Canada. *Epidemiology* (in press February 2013).
4. Labrèche F, Duguay P, Ostiguy C, Boucher A, Roberge B, Peters CE, [Demers PA](#). Estimating occupational exposure to carcinogens in Quebec: a multi-tiered approach. *American Journal of Industrial Medicine* (in press).
5. [Villeneuve PJ](#), Parent ME, [Harris SA](#), Johnson KC. Occupational exposure to asbestos and lung cancer in men: evidence from a population-based case-control study in eight Canadian provinces. *BMC Cancer* 2012;12:595. doi: 10.1186/1471-2407-12-595. Open Access.
6. [Hon C-Y](#), Venners S, [Demers PA](#), Teschke K. Antineoplastic drug contamination of surfaces throughout the hospital medication system in Canadian hospitals. *Journal of Occupational and Environmental Hygiene* 2013;10(7):374-383.
7. [Kachuri L](#), [Demers PA](#), [Blair A](#), [Pahwa M](#), Spinelli JJ, [Pahwa M](#), [McLaughlin JR](#), Pahwa P, Dosman JA, [Harris SA](#). Multiple pesticide exposures and the risk of multiple myeloma in Canadian men. *International Journal of Cancer* 2013. doi: 10.1002/ijc.28191. [Epub ahead of print].
8. Setton EM, [Hystad P](#), Poplawski K, Cheasley R, Cervantes-Larios A, Keller CP, [Demers PA](#). Risk-based indicators of Canadian's exposures to environmental carcinogens. *Environmental Health* 2013;12(1):15. [Epub ahead of print]. Open access.
9. Kosny A, Lifshen M, Pugliese D, Majesky G, [Kramer D](#), Steenstra I, Soklaridis S, Carrasco C. Buddies in Bad Times? The role of co-workers after a work-related injury. *Journal of Occupational Rehabilitation* 2013. doi: 10.1007/s10926-012-9411-z. [Epub ahead of print].
10. Koehoorn M, McLeod CB, Tamburic L, [Demers PA](#), Lynd LD, Kennedy SM. Population-Based Surveillance of Asthma among Workers: Pilot Study using Linked Health Data in British Columbia, Canada. *Chronic Diseases and Injuries in Canada* 2013;33(2):88-94.
11. De Vocht F, Christine Northgate, Money C, Cherrie JW, Rajan-Sithamparanarajah B, Egegh P, Niven K, [Demers P](#), Van Tongeren M. The Future of Exposure Assessment: Perspectives from the X2012 Conference. *Annals of Occupational Hygiene* 2013;57: 280-285. Open access.
12. Ng MG, Stjernberg E, Koehoorn M, [Demers PA](#), Winters M, Davies HW. Fertilizer use and self reported respiratory and dermal symptoms among tree planters. *Journal of Occupational and Environmental Hygiene* 2013;10(1):36-45. Open access.
13. [Kramer DM](#), Wells RP, Carlan N, Aversa T, Bigelow P, Dixon S, McMillan K. Did you have an impact? A theory-based method for planning and evaluation knowledge-transfer and exchange activities in occupational health & safety. *International Journal of Occupational Safety and Ergonomics* 2013;19(1):41-62.
14. Hystad P, [Demers PA](#), Johnson KC, Brook J, van Donkelaar A, Lamsal L, Martin R, Brauer M. Spatiotemporal air pollution exposure assessment for a Canadian population-based lung cancer case-control study. *Environmental Health* 2012;11(1):22. Open access.
15. Peters CE, Nicol AM, [Demers PA](#). Prevalence of exposure to solar radiation (UVR) on the job in Canada. *Canadian Journal of Public Health* 2012;103(3):223-26.
16. [Pahwa M](#), [Harris SA](#), [Hohenadel K](#), [McLaughlin JR](#), Spinelli JJ, Pahwa P, Dosman JA, [Blair A](#). Pesticide use, immunologic conditions, and risk of non-Hodgkin lymphoma in Canadian men in six provinces. *International Journal of Cancer* 2012;131(11):2650-2659.
17. Wong IS, Ostry AS, [Demers PA](#), Davies HW. Job Strain and Shiftwork influences on biomarkers and subclinical heart disease indicators: a pilot study. *Journal of Occupational and Environmental Hygiene* 2012;9(8):467-77. Open access.

Book Chapters In Press

1. Blewett C, Peters CE, Nicol AM, [Demers PA](#). Asbestos and Canada. In: *Atlas of Asbestos in the Americas*. Pan American Health Organization, Washington, D.C. In press.
2. [Blair A](#), [Hohenadel K](#), [Demers PA](#), [Marrett L](#), Straif K. Prevention of Occupationally-Induced Cancer. In: *Cancer Prevention and Screening*. Anthony B. Miller, Ed. Springer Scientific: New York. In press.
3. [Demers PA](#), Weinrich A. Wood Dusts. In: *Encyclopedia of Toxicology*, 3rd edition. Philip Wexler, Ed. Elsevier: Oxford, 2011. In press.

Submitted Manuscripts

1. Kachuri L, Villeneuve PJ, Parent ME, Johnson KC, Harris SA, the Canadian Cancer Registries Epidemiology Group. Occupational exposure to crystalline silica and the risk of lung cancer in Canadian men. *International Journal of Cancer* (manuscript submitted June 2013).
2. Pukkala E, Martinsen JI, Weiderpass E, Kjaerheim K, Lynge E, Sparén P, Demers PA. Cancer Incidence among Nordic Firefighters. *International Journal of Cancer* (manuscript submitted May 2013).
3. Hohenadel K, Demers PA, Straif K, Blair A. The effectiveness of asbestos-related interventions in reducing rates of lung cancer and mesothelioma: a review. *American Journal of Industrial Medicine* (manuscript submitted May 2013).
4. Hohenadel K, Raj P, Demers PA, Zahm, SH, Blair A. The inclusion of women in studies of occupational cancer: A review of the epidemiologic literature from 1991-2009. *Occupational and Environmental Medicine* (manuscript submitted May 2013).
5. Del Bianco A, Demers PA. Compensated occupational cancer fatality claims are on the rise. *Canadian Medical Association Journal* (submitted March 2013). Open access.
6. Raj P, Hohenadel K, Demers PA, Zahm, SH, Blair A. Recent Trends in Published Occupational Cancer Epidemiological Research: Results from a Comprehensive Review of the Literature. *American Journal of Industrial Medicine* (manuscript submitted February 2013).
7. Kramer DM, Wells RP, Carlan N, Bigelow P, Garritano E, Vi P. Identifying and Disseminating Innovations to Reduce the Risk of MSDs in Construction: Evaluation of a Knowledge Transfer Intervention. *Journal of Construction Engineering and Management* (submitted January 2013).
8. Hardt J, Vermeulen R, Peters S, Kromhout H, McLaughlin JR, Demers PA. A comparison of exposure assessment approaches: Lung cancer and occupational asbestos exposure in a population-based case-control study. *American Journal of Epidemiology* (manuscript submitted September 2012).
9. Harris SA, Boucher BA, Cotterchio M. Will women diagnosed with breast cancer provide biological samples for research purposes? *Cancer Epidemiology* (manuscript submitted March 2012).

Manuscripts in Preparation

1. Saini J, Koné A, Demers PA. Occupational cancer surveillance of Canadian mine workers, 1991-2003.
2. Kim E, Koné A, Peters C, Demers PA. Cancer risk among Canadian workers exposed to wood dust: A population-based cohort study.
3. Kim J, Peters C, Demers P. The burden of occupational cancer attributable to diesel engine exhaust exposure.
4. Koné A, Moore K, Del Bianco A, Kramer D, Genesove L, Demers PA. Characterizing occupational asbestos exposure in Ontario. *Canadian Journal of Public Health*.
5. Moore K, Kudla I, Oudyk J, Kramer D, Holness L. Making the link between exposure and respiratory cancer in the clinical setting: what are the steps? *Work: A Journal of Prevention, Assessment & Rehabilitation*.
6. Neil S, Pahwa M, Demers PA, Gotay C. A systematic review of health-related interventions in shift workers exposed to light at night.
7. Ostroumova E, Kesminiene A, Cardis E, Do M, Karotki AV, Baverstock K, Williams D. Health effects of the Chernobyl Nuclear Power Plant accident: 25 years on.
8. McLeod CB, Koehoorn M, Tamburic T, Demers PA. Evaluation of a physician letter to increase awareness of workers' compensation benefits for individuals with mesothelioma. *Canadian Medical Association Journal*.
9. Harris MA, Tjepkema M, Peters PA, Demers PA. Firefighter and police cancer risk surveillance in a national population-based cohort.
10. Hardt J, Harris MA, Tjepkema M, Peters PA, Demers PA. Welding and lung cancer: a population-based cohort study, Canada, 1991-2003.
11. Eiriksson L, Harris MA, Tjepkema M, Peters PA, Demers PA. Occupational exposures and ovarian cancer: a national population-based cohort study.
12. Clements M, Demers PA, Marrett L. Mesothelioma patterns and projections in Ontario and Canada.
13. Van Eerd D, Cole D, Keown K, Irvin E, Kohn MK, Kramer D, Gibson JB, Mahood Q, Slack T, Amick III B, Phipps D, Garcia J, Morassaei S. A systematic review of the quality and types of instruments used to assess KTE implementation and impact.
14. Do MT. Ionizing radiation exposure and risk of gastrointestinal cancers: A study of the Ontario uranium miners.
15. Do MT. Gamma dose estimation for Ontario Uranium Miners: An ecological approach.

Appendix 10: Non-Refereed Publications

Completed Reports

1. Candido E, Theis B, [Marrett LD](#), [Navaranjan G](#), [Del Bianco A](#), [Demers PA](#). Cancer Risk Factors in Ontario: Evidence Summary. Report, March 2013.
2. [Pahwa M](#), [Demers PA](#), [Kramer D](#). OCRC presses for strengthening Occupational Exposure Limits for carcinogens in Ontario. "News from the CREs" article in the *IWH At Work* Newsletter, Spring 2013.
3. [Jardine K](#), [Demers PA](#). Putting carcinogens into context: understanding the International Agency for Research on Cancer's ratings. Ontario Cancer Fact, February 2013.
4. [Koné A](#), [Moore K](#), [Del Bianco A](#), [Kramer D](#), [Demers PA](#). Occupational asbestos exposure in Ontario. "News from the CREs" article in the *IWH At Work* Newsletter, Winter 2012.
5. [Pahwa M](#), [Kramer D](#). OCRC evaluates workplace practices to reduce the health effects of shiftwork. "News from the CREs" article in the *IWH At Work* Newsletter, Fall 2012.
6. [Del Bianco A](#), [Demers PA](#). Occupational Cancer Fatalities on the Rise: The Examination of Accepted Workplace Fatality Claims Within Ontario and Canada. Report, September 2012.
7. [Moore K](#), Kudla I, Oudyk J, [Kramer D](#), Holness L. Making the link between exposure and respiratory cancer in the clinical setting: what are the steps? A report on the results of a development grant awarded by the Research Advisory Council of the Ontario Workplace Safety and Insurance Board. Report submitted to the WSIB August 2012.
8. [Pahwa M](#), [Demers PA](#), Ge C. Occupational exposure limits for carcinogens in Ontario workplaces: opportunities to prevent and control exposure. Report, April 2012.
9. [Del Bianco A](#), [Demers PA](#). Occupational cancer is the leading cause of workplace fatalities in Ontario. Ontario Cancer Fact, April 2012 (Special Edition).
10. [Del Bianco A](#), [Demers PA](#). OCRC says occupational cancer claims are on the rise. "News from the CREs" article in the *IWH At Work* Newsletter, Spring 2012.

Reports in Preparation

1. [Arrandale VH](#), [Demers PA](#), Bornstein S, Nies B, McLeod C, Koehoorn M. Tracking occupational diseases: an analysis of approaches for the Canadian context.
2. [Jardine K](#), [Arrandale VH](#), Peters CE, [Demers PA](#). Occupational Exposures to Nickel and Nickel Compounds in Ontario.
3. [Navaranjan G](#), [Arrandale VH](#), Peters CE, [Jardine KJ](#), [Demers PA](#). Occupational Exposures to Trichloroethylene in Ontario.
4. [Navaranjan G](#), [Arrandale VH](#), Peters CE, [Jardine KJ](#), [Demers PA](#). Occupational Exposures to Tetrachloroethylene in Ontario.
5. [Arrandale VH](#), Peters CE, [Jardine K](#), [Demers PA](#). School Teachers and Occupational Exposure to Wood Dust in Ontario.
6. [Koné A](#), [Moore K](#), [Del Bianco A](#), [Kramer D](#), [Demers PA](#). Characterizing occupational asbestos exposure in Ontario.
7. [Jardine K](#), [Raj P](#), [Demers PA](#). Libby Sister Sites in Ontario.
8. Curran V, Hayward M, Bornstein S, [Del Bianco A](#), [Demers PA](#), Bartlett K, Davies H, LeFort S, MacKinnon S, Neis B, Miller S. Educational offerings in health and safety in Canadian post-secondary institutions.
9. [Do M](#), [Marrett LD](#), Cardis E, [McLaughlin JR](#), [Navaranjan G](#), [Koné A](#). Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: a feasibility study. Final draft under review.
10. [Liu P](#), [Demers PA](#). The history of occupational cancer research in Ontario and Canada.

Appendix 11: Conference Abstracts

1. Demers PA. Latest Findings from the UN International Agency for Research on Cancer (IARC). Invited plenary presentation at the 9th Annual International Asbestos Awareness Conference, Washington, DC, March 23, 2013.
2. Eiriksson L, Harris A, Tjepkema M, Peters PA, Demers PA. Occupational exposures and ovarian cancer: A national population-based cohort study. Oral presentation at the Society of Gynecologic Oncology 2013 Annual Meeting on Women's Cancer, Los Angeles, California, March 9-12, 2013.
3. Kachuri L, Demers PA, Harris SA, Pahwa M, Blair A, and Cross-Canada Study of Pesticides and Health working group. Multiple pesticide exposures and the risk of multiple myeloma in Canadian men. Oral presentation at the UICC World Cancer Congress, Montréal, Quebec, August 27-30, 2012.
4. Demers PA. Assessing environmental and occupational exposures: CAREX and the Occupational Cancer Research Centre. Invited oral presentation at the UICC World Cancer Congress, Montréal, Québec, August 27-30, 2012.
5. Demers PA. CAREX Canada – Supporting the Prioritization of Primary Prevention Programs. Invited oral presentation at the UICC World Cancer Congress, Montréal, Quebec, August 27-30, 2012.
6. Hall AL, Peters CE, Demers PA. Exposure to Antineoplastic Agents in Canadian Occupational Settings. Poster presentation at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
7. Oudyk J, Giles Murphy T, Demers P, Bornstein S. Quantifying the error associated with assigning the mean of a similar exposed group to a single individual within that group – An exploration using an asbestos exposure database. Oral presentation at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
8. Kirkham T, Koehoorn, M, Davies, HW, Demers PA. Work-related stressors and their effect on salivary cortisol during firefighting. Poster presentation at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
9. Peters CE, Demers PA. Assigning levels of exposure to occupational carcinogens in CAREX Canada. Oral presentation at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
10. Demers PA. Closing Panel Presentation. Invited panel speaker at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
11. Demers PA. Using exposure data for surveillance and population-based studies (Symposium). Invited oral presentation at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
12. Hardt J, Demers PA, Peters S, Kromhout H, Vermeulen R, McLaughlin JR. A comparison of exposure assessment approaches: lung cancer and occupational asbestos exposure in a population-based case control study. Poster presentation at the International Conference on the Science of Exposure Assessment (X2012), Edinburgh, UK, July 2-5, 2012.
13. Peters CE, Hall AL, Ge C, Davies HW, Nicol AM, Demers PA. Exposure to occupational carcinogens: A national exposure surveillance project (CAREX Canada). Oral presentation at the Canadian Public Health Association Conference 2012, Edmonton, Alberta, June 11-14, 2012.
14. Harris A, Demers PA. Data Linkages Supporting Occupational Cancer Surveillance. Oral presentation at the North American Association of Central Cancer Registries (NAACCR) Annual Conference, Portland, Oregon, June 5-7, 2012.
15. Pahwa M (organizer), Spinelli JJ (co-chair), Blair A (co-chair). Symposium: Agricultural exposures, lymphatic cancers, and pesticide exposure assessment. Held at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, BC, June 1-2, 2012.
16. Pahwa M, Harris SA, Hohenadel K, McLaughlin JR, Spinelli JJ, Pahwa P, Dosman JA, Blair A. The effect of immune conditions on pesticide use and the risk of non-Hodgkin lymphoma in Canadian men. Oral presentation in the Pesticides Symposium at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
17. Navaranjan G, Hohenadel K, Demers PA, Blair A, Spinelli JJ, Pahwa P, McLaughlin JR, Dosman JA, Harris SA. Exposures to Multiple Pesticides and Combinations of Pesticides and the Risk of Hodgkin Lymphoma in Canadian Men. Oral presentation in the Pesticides Symposium at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
18. Peters C (organizer), Demers PA (organizer, chair). Symposium: Innovations in Occupational Cancer Surveillance. Held at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, BC, June 1-2, 2012.
19. Harris A, Tjepkema M, Peters PA, Demers PA. Surveillance of firefighter and police cancer risks in a national population-based cohort. Oral presentation in the Surveillance Symposium at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
20. Kramer D (organizer), Wells R (chair). Symposium: Work & Health in the Complex World of Construction. Held at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
21. Kramer D, Wells R, Bigelow P, Carlan N, Aversa T. A Knowledge-transfer and Exchange Method of Evaluation (KEME) System: a framework to help evaluate occupational health and safety knowledge transfer interventions. Oral presentation in the Work & Health in Construction

Symposium at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.

22. Peters CE, McLeod CB, Demers PA. Creating a job exposure matrix (JEM) for wood dust using CAREX Canada data. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
23. Ge C, Peters CE, Demers PA. Occupational exposure to silica dust in Canada. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
24. Demers PA, Harris A. Occupational cancer surveillance using a Canadian cancer registry and census linkage. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
25. Demers PA, Peters CE, Hall AM, Ge C, Davies HW, Nicol AM. CAREX Canada: An occupational carcinogen surveillance program. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
26. McLeod C, Peters CE, Demers PA, Koehoorn M. Wood dust related cancers in British Columbia, 1985-2008. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
27. Takaro T, Koehoorn M, Maier L, Ushida Y, Van Dyke M, McLeod C, Demers PA. Following up the use of administrative databases to find beryllium disease in British Columbia. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
28. Bornstein S, Neis B, Demers PA, Oudyk J, Small S, Takaro T, Fowler K, Fox G, Dicks E, Butt A. An occupational disease registry for Newfoundland's asbestos workers. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
29. Garzia N, Teschke K, Demers PA, Spinelli JJ. A systematic review: Using previously measured dermal exposure information to develop an occupational pesticide exposure assessment. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
30. Giles Murphy T, Oudyk J, Demers PA, Bornstein S. Quantifying the error associated with assigning the mean of a similar exposed group to a single individual within that group – An exploration using an asbestos exposure database. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
31. C-Y Hon, Teschke K, Chu W, Demers PA, Venners S. Urinary contamination levels of healthcare workers exposed to antineoplastic drugs at British Columbian hospital pharmacies. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
32. Wong I, Demers PA, Ostry A, Davies HW. Recovery time from shiftwork may influence the risk of heart disease. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
33. Moore K, Holness L, Kramer D, Oudyk J, Kudla I. Making the link between asbestos exposure and respiratory cancer in the clinical setting: What are the steps? Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
34. Del Bianco A, Demers PA. The Changing Face of Workplace Fatalities in Canada. Oral presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
35. Raj P, Jardine K, Ge C, Demers PA. Creation and analysis of a Canadian Exposure Studies Database. Poster presentation at the Canadian Association for Research on Work and Health (CARWH) Conference, Vancouver, British Columbia, June 1-2, 2012.
36. Navaranjan G, Hohenadel K, Demers PA, Blair A, Spinelli JJ, Pahwa P, McLaughlin JR, Dosman JA, Harris SA. The Risk of Hodgkin Lymphoma in Canadian Men from Exposure to Multiple Pesticides. Poster presentation at the Ontario Public Health Convention (TOPHC), Toronto, Ontario, April 2-4, 2012.

Appendix 12: Presentations

1. Demers PA. CAREX Canada as a tool for environmental surveillance. Invited oral presentation at the Environmental Health Surveillance Database Integration Project Planning Meeting, International Joint Commission, Toronto, Ontario, March 21, 2013.
2. Demers PA. Occupational Cancer: Current Knowledge, Gaps, and the Role of Research. Invited oral presentation at the Annual Professional Development Conference of the Occupational Hygiene Association of Ontario Annual Meeting, Toronto, Ontario, March 20, 2013.
3. Kramer D. The theories, conceptual frameworks and models of knowledge translation and exchange. Oral presentation at the Knowledge Translation and Professional Certificate (KTPC™) Course offered by The Hospital for Sick Children and University of Toronto Faculty of Medicine, Toronto, Ontario, February 2013.
4. Demers PA. Exposure Assessment for Occupational & Environmental Epidemiology Studies. Guest lecture at Laurentian University, Sudbury, Ontario, February 1, 2013.
5. Demers PA. Occupational Cancer: Current Knowledge, Gaps, and the Role of Research. Invited presentation at the Ontario Occupational Health Nurses Association Webinar, January 30, 2013.
6. Demers PA. IARC's Process for Classifying Carcinogens. Guest lecture at Ryerson University, Toronto, Ontario, January 24, 2013.
7. Demers PA. Occupational Carcinogen Hazards among Public Service Workers. Invited oral presentation at the Public Service Health and Safety Association Staff Education Event, Mississauga, Ontario, November 29, 2012.
8. Demers PA. Synopsis of the Symposium on Interventions Mitigating Health Risks among Shift Workers. Invited oral presentation at the St. Michael's Hospital Occupational Medicine Grand Rounds, Toronto, Ontario, November 21, 2012.
9. Demers PA. Experiences and Achievements Building CAREX Canada. Invited oral presentation at the Sharing CAREX Experiences in the Americas: Pan American Health Organization Webinar, November 20, 2012.
10. Pahwa M, Neil SE, Mustard C, Saunders R, Aronson K, Kramer D, Demers PA, Gotay C. Practical strategies to reduce the health effects of shiftwork. Oral presentation at the Partners in Prevention Forum North Health and Safety Conference and Trade Show, Thunder Bay, Ontario, November 6-7, 2012.
11. Del Bianco A, Pahwa M. The OCRC's Developments in Occupational Cancer Research. Oral presentation at the Partners in Prevention Forum North Health and Safety Conference and Trade Show, Thunder Bay, Ontario, November 6-7, 2012.
12. Jardine K, Raj P, Cervantes-Larios A, Demers PA. Vermiculite in Ontario. Poster presentation at the Partners in Prevention Forum North Health and Safety Conference and Trade Show, Thunder Bay, Ontario, November 6-7, 2012.
13. Moore K, Kudla I, Oudyk J, Kramer D, Holness L. Making the link between respiratory cancer and exposure to asbestos: what we've learned and where we're going. Poster presentation at the Partners in Prevention Forum North Health and Safety Conference and Trade Show, Thunder Bay, Ontario, November 6-7, 2012.
14. Pahwa M, Neil SE, Mustard C, Saunders R, Aronson K, Kramer D, Demers PA, Gotay C. Shiftwork and health: A survey of knowledge needs and a review of interventions. Poster presentation at the Partners in Prevention Forum North Health and Safety Conference and Trade Show, Thunder Bay, Ontario, November 6-7, 2012.
15. Del Bianco A, Demers PA. Trends in compensated workplace fatalities in Ontario and Canada. Poster presentation at the Partners in Prevention Forum North Health and Safety Conference and Trade Show, Thunder Bay, Ontario, November 6-7, 2012.
16. Demers PA. Shift Work: An overview of health effects and potential interventions. Invited oral presentation at the Interventions Mitigating Health Risks among Shift Workers Symposium, Toronto, Ontario, November 6, 2012.
17. Demers PA. Occupational Carcinogen Hazards among Public Service Workers. Invited oral presentation at the Public Service Health and Safety Association Advisory Council Summit Meeting, Mississauga, Ontario, October 23, 2012.
18. Kramer D. The theories, conceptual frameworks and models of knowledge translation and exchange. Oral presentation at the Knowledge Translation and Professional Certificate (KTPC™) Course offered by The Hospital for Sick Children and University of Toronto Faculty of Medicine, Toronto, Ontario, October 2012.
19. Demers PA. Current state of knowledge regarding occupational carcinogens. Oral presentation at the Workplace Safety and Insurance Board Special Seminar, Toronto, Ontario, October 1, 2012.
20. Demers PA. Asbestos exposure and the burden of asbestos-related disease in Canada. Oral presentation at the "Screening, Early Detection and Treatment: The Canadian and Indian Experiences" session of the Asbestos Disease Symposium sponsored by OHCOW and the Canadian Mesothelioma Society, Toronto, Ontario, September 27, 2012.
21. Pahwa M, Harris SA, Hohenadel K, Navaranjan G, Kachuri L, Ritter L, McLaughlin JR, Spinelli JJ, Pahwa P, Dosman JA, Demers PA, Blair A. Pesticide exposure and the risk of select cancers in Canadian men. Invited oral presentation at the Health and Safety Association Liaison Committee (HSALC) quarterly meeting, Institute for Work and Health, Toronto, Ontario, September 7, 2012.
22. Demers PA. Shiftwork and the Mining Industry. Oral presentation at the United Steelworkers National Mining Convention, Toronto, Ontario, June 12, 2012.

23. Demers PA. New and Upcoming Research Priorities in Occupational Cancer. Invited oral presentation at the Annual General Meeting of the Canadian Registration Board of Occupational Hygienists, Toronto, Ontario, June 8, 2012.
24. Demers PA. Occupational cancer research: Current state of knowledge and data gaps. Keynote oral presentation at the Canadian Registered Board of Occupational Hygienists Annual General Meeting, Toronto, Ontario, June 8, 2012.
25. Del Bianco A, Demers PA. Occupational Cancer in Ontario and Workplace Fatality Claims. Poster presentation at the British Columbia Environmental and Occupational Health Research Network Annual General Meeting & Spring Conference, Vancouver, British Columbia, May 31, 2012.
26. Raj P, Jardine K, Ge C, Demers PA. Creation and analysis of a Canadian Exposure Studies Database. Poster presentation at the British Columbia Environmental and Occupational Health Research Network Annual General Meeting & Spring Conference, Vancouver, British Columbia, May 31, 2012.
27. Demers PA. Occupational Cancer: Current Knowledge, Gaps, and the Role of Research. Oral presentation at the Partners in Prevention Health and Safety Conference and Trade Show, Mississauga, Ontario, May 1-2, 2012.
28. Demers PA. Shiftwork – The New Carcinogen? Oral presentation at the Partners in Prevention Health and Safety Conference and Trade Show, Mississauga, Ontario, May 1-2, 2012.
29. Pahwa M, Demers PA, Ge C. Occupational exposure limits for carcinogens in Ontario workplaces: Opportunities to prevent and control exposure. Poster presentation at the Partners in Prevention Health and Safety Conference and Trade Show, Mississauga, Ontario, May 1-2, 2012.
30. Del Bianco A, Demers PA. Occupational Cancer is the Leading Cause of Workplace Fatalities. Poster presentation at the Partners in Prevention Health and Safety Conference and Trade Show, Mississauga, Ontario, May 1-2, 2012.
31. Demers PA, Harris A. New models for occupational cancer surveillance in Canada. Invited oral presentation at the Institute for Work and Health Plenary, Toronto, Ontario, April 17, 2012.
32. Demers PA. CAREX Canada: 5 years of progress. Invited oral presentation at the Canadian Partnership Against Cancer Board of Directors Meeting, Quebec City, Quebec, April 12, 2012.
33. Demers PA. The Occupational Cancer Research Centre. Invited oral presentation at the Canadian Cancer Society Annual Breakfast, Sarnia, Ontario, April 4, 2012.