Occupational
Cancer
Research
Centre

OCCUPATIONAL CANCER RESEARCH CENTRE

YEAR 5 (2013-2014) OPERATING PLAN

February 15, 2013

Towards a cancer-free workplace

Year Five Projection Report

Introduction

2013 is the Occupational Cancer Research Centre (OCRC) fifth year, and we are expecting it to be a seminal year. OCRC is the only research centre of its kind in Canada focusing on the prevention of occupational cancer, and its reputation is increasing both nationally and internationally. The mandate of the Centre is to fill the gaps in our knowledge of occupation-related cancers, and to translate these findings into preventive programs to control workplace exposures to carcinogens and improve the health of workers.

The Centre's mandate has gained in prominence as new knowledge emerges on the social, human and economic burden of occupational cancer. The increased awareness of the importance of workplace cancers is evidenced by the growing number of accepted compensation claims from workers who have been exposed to known carcinogens, such as asbestos. Based on accepted claims data, more workplace fatalities are now due to cancer than to accidents and injuries (see Appendix C). There is also our growing knowledge about the number of workers who are exposed to carcinogens, and the potential increase, in the near future, of the number of workers exposed to new carcinogens, as industries in Ontario, such as mining, expand. The scope and relevance of the Centre's mandate will also continue to grow as the International Agency for Research on Cancer (IARC) evaluates new evidence and classifies increasing numbers of occupational exposures and activities as carcinogenic. Recent examples include the reclassification of diesel engine exhaust and trichloroethylene as "known" human carcinogens, and the recognition that shiftwork is a "probable" human carcinogen.

Despite the need for the Centre's research, the Centre's ongoing ability to plan for and conduct research is challenging because of a lack of long-term commitment for core funding. The OCRC is moving into the fifth and final year of the foundational contract between the Workplace Safety and Insurance Board, Cancer Care Ontario, and the Canadian Cancer Society's Ontario branch that instigated the formation of OCRC. Hence, this is the year to not only think through how OCRC will develop and expand its growing program of research, but to also ensure that we have funding as we look forward to the next five years.

Changes are taking place amongst the funding organizations. The responsibility for funding occupational health and safety research has been transferred from the Workplace Safety and Insurance Board to the Prevention Office at the Ministry of Labour. This means that any new contract that extends funding will now be with the Ministry of Labour and not the WSIB. In addition, Cancer Care Ontario has newly created a Prevention and Surveillance unit to coordinate and expand its prevention efforts. OCRC is an active partner in these prevention efforts and, as a result, the visibility and support of the Centre has increased within its host organization. One of the immediate issues facing the Centre will be to respond to the implications of this changing funding milieu beyond March 2014.

The Three year Funder' Review Panel

As we write this Year 5 projection report, we also need to respond to the *Three-Year Funders' Review Panel Report on OCRC* (see Appendix B). The review took place in October 2012, and the report was made public in February 2013. The report was very positive:

> *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."*

In summary, the Panel's recommendations were to:

(1) Strengthen the Centre by hiring an assistant director to help with academic and research administration, and an occupational health expert to help with knowledge transfer of the research findings to policy decision-makers. Enhance the participation of the adjunct researchers;

(2) Work with the funders to provide long-term funding. This will ease the administrative barriers to staff retention so staff can be offered permanent positions. Work with the funders to facilitate international travel;

(3) Enhance the value of the Centre to its funders and to the community by expanding its research and educational activities to include the effect of workplace carcinogens on community and public health through their impact on the environment. Offer assistance on decisions on entitlement to workers' compensation. Develop methodologies to better quantify the workplace contribution to cancer causation. Play an advisory role to industry and trade unions and other third parties;

(4) 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. Establish an enhanced collaborative role with national and international organizations, and expand the scope of the Centre to operate on a national level.

As the Centre approaches its Year 5, and begins a major new strategic initiative to help frame the following five years, it will respond to each of these recommendations. But it is worth emphasizing that implementing each of the recommendations is contingent upon knowing the long-term funding situation. For example, hiring the people that the Panel has suggested, expanding the scope of the Centre to be national or to include environmental impacts, or increasing the knowledge transfer initiatives to help our funders in their advice and recommendations to government, all require funding beyond March 2014.

Responding to the Tony Dean Report

There is also a changing emphasis on the kind of research that is most valued by Ontario occupational health and safety (OH&S) system that the Centre has been responsive to. The transfer of responsibility for funding OHS research to the Ministry of Labour's Prevention Office was a recommendation from *The Expert Advisory Panel on Occupational Health and Safety*, commonly referred to as the Tony Dean Report. This report, under Recommendation 4, talks about the importance of research as a tool that supports innovation. "It functions as a conduit to new ideas and concepts. It can also help deal with ongoing problems, identify new issues and identify solutions." It goes on to say that there has been a call for: "more participatory research projects involving stakeholders and workplace parties to evaluate workplace interventions and to explore new and emerging concerns".

Although this may seem to be a new priority set by the OH&S System, the OCRC has always engaged workplace parties in its research agenda. As outlined in the OCRC Three Year Self-Evaluation Report (see Appendix A), stakeholders have always had an influence over the OCRC research portfolio, and their needs and priorities have always been taken into consideration. A stakeholder survey conducted in 2009 influenced the five-year strategic document that has been the guiding document for the Centre over this duration. Ongoing surveys have kept the Centre attuned to the pulse of stakeholder needs, stakeholders have been regularly engaged in OCRC public events, and the very significant number of presentations that have been given at stakeholder venues reflects the Centre's constant interactions with the potential users of our research. Moreover, as the Centre has developed, our prevention-focused intervention research portfolio has increased in size, and our engagement has intensified with stakeholders now involved as research partners on research studies. That is not to say that with more resources more could not be done, and the Centre's commitment is to increasing stakeholder engagement in the research portfolio. More details of the Centre's knowledge transfer & exchange strategy runs throughout this report.

Five Year Strategic Plan

The strategic plan that created the framework for the Centre in 2009 had four major initiatives, and these continue to guide the Centre's activities. They are to: (I) build a program of research; (II) develop research capacity in the field; (III) reach out to stakeholders to deliver and exchange knowledge on occupational cancer, and (IV) establish a sustainable research centre. In the past, we have reported on each of these four strategic initiatives individually. However, as the Centre grows and develops, we have found that capacity building and stakeholder engagement is integral to the full program of research. Consequently, in this report, we will include capacity building and stakeholder engagement under the three major components of the program of research since some of these initiatives are project specific. That being said, there are knowledge transfer & exchange activities that enhance the general profile of the Centre, and these will be discussed separately, as will the initiatives that the Centre plans to take to establish its long-term sustainability.

Strategy I: The OCRC Program of Research

The OCRC's program of research has three main components. They are: (i) prevention and intervention research with a focus on determining the burden of occupational cancer, reducing workers' exposures, and leading to better industrial hygiene policies (ii) surveillance research that aims at monitoring trends and patterns of occupational cancer and carcinogen exposure, and (iii) research focused on identifying the occupational causes of cancer. This is a broad research mandate reflective of the far-reaching health impacts of workplace exposures on multiple occupations and sectors. The following sections will give examples of studies that fall into the three components of the program of research, while also highlighting capacity building and knowledge transfer & exchange initiatives that are specific to the individual research studies.

1.1 Prevention & Intervention Research

Prevention & Intervention research is a developing and growing focus for the Centre, and aligns well with the prevention focus of the Ontario Ministry of Labour. This research will 1) support healthier workplaces and more knowledgeable workers, and employers, 2) foster the integration of health and occupational services and organizations, 3) create evidence-based interventions to prevent workers from being exposed to carcinogens in the future, 4) help workers with occupationally-caused cancer access workers compensation, and 5) help clarify and facilitate the creation of a "circle of care" to support workers with cancer.

The first major study in the Centre's prevention portfolio is a major study to estimate the human and economic burden of 44 occupational carcinogens identified by the International Agency for Research on Cancer. Funding for this study ($1 million over four years) was recently received from the Canadian Cancer Society Research Institute (CCSRI) The Canadian Cancer Society's Ontario Division is a partner on this research study. They will help prioritize the carcinogens that will be studied, help create key messages from the study to facilitate communication, ensure that their membership is involved in disseminating the findings of the study, and will work with the OCRC to engage with policy decision makers to ensure that the research findings help inform occupational prevention policy. An innovative aspect of this study is the calculation of the full economic costs of workplace cancer in order to lever greater prevention efforts. This study has been initiated in this Year 5, and will continue for the four years. This is a team grant that was received at the end of 2012 within a highly competitive environment and will act as a bridge to extend the Centre's funding beyond the end of the foundational contract.

The intervention portfolio is made up of a number of smaller projects that are in the process of receiving funding. One study is looking at how awareness of occupational exposure can impact behaviour changes in the workplace and community levels. This study will be based in Sarnia where there has been heightened awareness of the workplace and community exposure to potentially carcinogenic chemicals. It will examine technological, administrative, and personal-protective equipment changes in workplaces. It will be conducted in collaboration with Dr. Linn Holness at the Centre of Research Expertise in Occupational Disease (CRE-OD). It has support from multiple organizations in Sarnia, including an

industry-specific organization. OCRC is exploring funding for this project in Year 5. As this feasibility study rolls out, future funding beyond year Year 5 will be sought to make a comparison to the city of Sudbury where exposure is also high, but awareness is significantly lower. This study could lead to some major generalizable initiatives to reduce workers' exposure to carcinogens in the workplace. Since this study involves community involvement, and the organization of, and analysis of, multiple focus groups, a number of students could be involved in the study.

In another study we are examining the process whereby workers, diagnosed with lung cancer or mesothelioma, can have their work histories recorded to determine their potential exposure to asbestos and their eligibility for workers' compensation. This study builds upon a feasibility study that took place at the Hamilton Juravinski Cancer Clinic in Year 4 that was conducted in collaboration with Dr. Holness. Funding is being sought from the CCSRI in Year 5, so that we can do this intervention study in Toronto, Sarnia and London. If funding can be found, it will also take place in Thunder Bay, Windsor and Sudbury. Each intervention will be slightly different depending on the needs of the different cities. The Toronto and London studies will be based in the large city lung cancer clinics. In Sarnia, only three to four lung cancer patients are seen at the hospital. However, the wider community wants to be involved in the research because many organizations have contact with workers with cancer. The local chapter of the Canadian Cancer Society, organized labour, the palliative-care hospital, the Community Care Access Centre, and the Bluewater Hospital all have offered their support for this study and have said they would like to be involved in the study and give workers a basic survey on their exposure. The Mayor of Sarnia is also a research partner on this project.

As the Centre builds an expertise in the mining sector in Year 5 and beyond, we plan on designing a number of large-scale intervention studies in the mining sector. We wish to examine interventions to minimize the impact of shiftwork and light deprivation on miners, as well as ways to reduce exposure to diesel engine exhaust, an exposure that has recently been classified by IARC as carcinogenic to humans. These studies will lead to an in-depth knowledge of the health effects of the unique occupational issues affecting this specific group of workers.

To round out this Prevention & Intervention portfolio, the Centre is also exploring funding for another major study that will examine the barriers that hinder construction workers adopting personal preventive clothing and sunscreen to protect themselves from ultraviolet radiation, and the facilitators that will encourage them to do so. The study will focus on roofers and road workers in small and medium-sized construction firms. It will build upon previous research about how to successfully reach and introduce behavior change in these types of construction firms and their existing networks, which encompass a hard-to-reach, vulnerable population.

As outlined, these intervention studies have involved community partners both as supporters and research partners. This ensures the relevance and immediacy of the research, and also acts as an opportunity to build knowledge and capacity about occupational exposure and cancer amongst stakeholders. This is called "integrated knowledge transfer" by the Canadian Institutes of Health Research (CIHR). This engagement in the research process also bodes well for increasing the

involvement of our stakeholders in disseminating the findings of the research (called "end-of-grant knowledge transfer" by CIHR). The Centre is using these studies to build student capacity, and also to build community awareness and knowledge about occupational exposures and their link to cancer.

The Prevention & Intervention research portfolio has been designed to support the goals of the Ontario Cancer Plan. In particular, this research seeks to develop evidence-based knowledge necessary for the prevention of occupational causes of cancer and use it to develop practical interventions to reduce workplace cancer. Through this work, the OCRC stakeholders will have better information regarding occupational cancer that can be used to formulate relevant policies and procedures.

Different indicators will be used to evaluate the success of the Prevention and Intervention program of research. The number of policy recommendation directly inspired by the results will be tracked. We anticipate an increase in awareness regarding local and provincial health services and resources relevant to occupational cancer, workplace exposures and workers' compensation and performance indicators will be used to track this. Such indicators will measure the extent to which the promotion and adoption of prevention tools and behaviours are implemented in workplaces.

1.2 Surveillance Research

The Centre engages in two kinds of surveillance research: occupational cancer and carcinogen exposure surveillance. Surveillance is used to generate the basic data on disease and exposure needed for evidence based decision making. It can be used target high risk groups, set priorities for prevention-related activities, monitor trends, assess the impact of regulations, and predict future cases of disease.

Canada does not currently have any system in place for the ongoing surveillance of occupational cancer. With the funding of a WSIB-RAC grant, we are working with Statistics Canada and Health Canada on an important new linkage of the 1991 Canadian Long-form Census data to the Canadian Cancer Registry, which has created a dataset that includes occupation, industry, and other data from the long-form census with cancer follow-up through 2003 (soon to be 2008) on over 2.1 million people. This linkage will allow us to investigate the rates of cancer in many different industries. For example, we have already investigated electrical workers, wood workers, firefighters and police, and welders. In year five, we will examine the incidence of cancers among miners and hairdressers and barbers, and the risk of cancers from shift work, wood dust and sedentary work.

Similarly, we have a small feasibility study, also funded by the WSIB-RAC that in year 5, to explore linking the Ontario Cancer Registry to the lost-time injury data base that is kept by the Workplace Safety and Insurance Board. The goal of this innovative project will be to create a dataset of similar size to the Census cohort, which will increase our ability to examine the risks in Ontario industries.

We are increasing our work in the area of exposure surveillance to examine current and historical exposure levels to known and suspected carcinogens to identify potentially high-risk groups to target for prevention or further study. We are analyzing data collected by the Ontario Ministry of Labour between

1981 and 1996 (after which collection of exposure measurements was dramatically cut back) to determine patterns and trends of exposure to many known and suspected carcinogens such as asbestos, benzene, tetrachloroethylene, silica and wood-dust. As well, OCRC and CAREX Canada (which are closely linked through OCRC's Director, who is also the Scientific Director of CAREX Canada) are collaborating closely to estimate the number of Ontario workers exposed as well as their levels of exposure and to investigate new occupational exposure issues.

Similarly, we are also analyzing data collected by the Ministry of Labour on workers' exposure to asbestos. This Asbestos Registry is being analyzed to determine which sectors and workers are at the highest risk, as well as regions where the highest exposure occurs. Thirdly, the Centre has just received funding from the MoL/WSIB-RAC to access multiple sources of historical data on exposures in the mining sector, enabling us to learn more about the exposures affecting miners over the past decades. Dr. Leon Genesove who is the Ministry of Labour's chief physician has demonstrated his support and interest in this study by becoming a research partner on the grant proposal. The Centre is interested in expanding this inquiry into the mining sector and is exploring future funding with the help of the Canadian Cancer Society to explore exposures that are particular to mining. Fourthly, in partnership with the Centre's sister organization, CAREX Canada, the Centre will analyze this data to examine the "hot spots" of occupational and environmental exposure in Ontario. The Canadian Cancer Society has shown particular interest in this study since it will help determine regional priorities for toxic use reduction in Ontario.

Each winter and summer, the Centre hosts two to four students who are doing their practicum and most of them work have on these surveillance projects. The students are supervised by Paul Demers and the senior research associates, and they can take advantage of the ongoing learning opportunities offered at the Centre. Practicums are a requirement for a number of master's programs. For the last couple of years, the students have come from the Dalla Lana School of Public Health at the University of Toronto. Most have been completing their masters in epidemiology, but there have also been students in hygiene and the research-stream of public health. The Centre has reached out to other programs at the University of Toronto and Ryerson University to ensure that we have a steady stream of students who are exposed to this fascinating field of research. Each of the surveillance projects offers the epidemiology or hygiene students an opportunity to do individual projects, where they determine their own research question, and carry through a project from analysis to the write up of a manuscript potentially for submission to an academic journal. The prevention projects have work that is more appropriate to social science students as they are more community and workplace based, and the Centre is also reaching out to these students. Worth noting is that the learning and work environment at the Centre has been so positive, that a number of the students after graduation, have joined the Centre as staff members.

1.3 Research into the Causes of Cancer

The third major research portfolio at the Centre is to conduct epidemiologic studies on the causes of workplace cancer. These studies help us to determine what substances are, or are not, occupational carcinogens, what types of cancer they cause, and the levels of exposure at which they become hazardous. The data from these studies is essential for prevention by informing regulations, such as

labeling requirements under WHMIIS or contributing to establishing strong occupational exposure limits. The Centre's projects in this portfolio primarily utilize existing datasets. This has, and will continue to, provide a cost effective means to quickly explore a variety of research questions. The Centre's projects in this portfolio have also offered us the opportunity to collaborate with national and international research partners, increasing the profile of the Centre and the important role it plays in the research of occupational cancer.

We are continuing to investigating the association between pesticide exposure and Hodgkin and non-Hodgkin lymphoma, multiple myeloma, and soft tissue sarcoma using data from the Cross Canada Study of Pesticides and Health, a case-control study with data from six provinces. We are in the process of pooling it with data from four Northern U.S. states in collaboration with researchers at the University of Saskatchewan, BC Cancer Agency, and U.S. National Cancer Institute. We are continuing our collaboration with the international Synergy project, a 14-country effort to study the combined effects of different lung carcinogens coordinated by IARC. This year we will be completing our study on exposure to diesel and gasoline emissions and the incidence of colorectal and bladder cancer. This study is being done using data from the National Enhanced Cancer Surveillance System in collaboration with researchers from Health Canada and the Institut Armand-Frappier of the Université du Québec. We have started several other studies using the same dataset to examine the effects of magnetic fields and silica.

The extended follow-up of the Ontario Uranium Miners Cohort has just been completed by Statistics Canada. This year, in collaboration with the Canadian Nuclear Safety Commission (who also funded the extended follow-up), we will be analyzing dataset to examine the cancer risks associated with radon. We are continuing to collect data for our case-control study on exposure to chemicals and the risk of breast cancer in young women with funding from the Canadian Cancer Society Research Institute. We are also completing a feasibility study of the health risks among nuclear workers in Ontario who are exposed to internal sources of ionizing radiation is underway. We will also be assessing the feasibility of initiating several cohort studies of miners to examine a variety of potential hazards including shift work, silica, and diesel engine exhaust.

Strategy II: Building the Research Team

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. The Centre also has several part-time staff. As we move into year 5, the OCRC plans on hiring a senior research associate with experience in occupational cancer to help lead the new Burden study, a research coordinator who will help with the administration of the research projects, and two more research associates with skills in epidemiology and occupational health and safety to both assist in the research as well as act as knowledge brokers.

One of the major challenges in year 5 will continue to be the ability to identify another post-doctoral fellow or senior staff member with expertise in occupational cancer epidemiology who can take

leadership on research projects. We have formally launched a search for a Senior Research Associate three times and have found it very difficult to identify Canadian candidates with a strong background in this field. We have hired staff with backgrounds in epidemiology and environmental science with the expectation that they will develop content knowledge of the field over time, which contributes to our goal of building capacity, but finding a senior research associate who is already an expert in the field of occupational cancer is a challenge. We are presently extending our search to the United States and Europe, but our inability to offer long-term, permanent positions is an impediment to recruiting staff who must make the commitment to relocate from elsewhere.

The Centre currently has eight scientists based in other departments within Cancer Care Ontario or in other institutions. Our most recent addition is Dr. Chun-Yip Hon from Ryerson University, with an expertise in occupational hygiene and a specific interest in nurses' exposure to antineoplastics. As we continue to increase our collaboration with researchers across Ontario and Canada, this list will expand. The OCRC currently has three student researchers, all affiliated with the University of Toronto. We are currently interviewing students for four summer placements and have received applications from several different universities, including McGill.

Strategy III: Knowledge Transfer and Exchange

Each of the Centre's research studies includes the goal to deliver and exchange knowledge. The Centre wishes to build awareness of occupational cancer, provide the evidence-based knowledge to help inform policy and practice, and encourage dialogue and the emergence of new research questions. Moreover, Cancer Care Ontario (CCO) has requested that the Centre develops key messages from our research which can contribute to CCO's mandate to give advice to government on cancer prevention. This request, as an emerging mandate for the Centre, will be very important in Year 5 and will help frame much of our KTE efforts.

The Centre's KTE strategy is four fold: (1) the intensive engagement of stakeholders and funders as research partners to ensure the relevance of our research; (2) engaging policy makers during the research process so that our research can have a policy impact; (3) the creation of key messages from the findings of our research to enable clear communication; and (4) developing communication products such as presentations, reports, posters, brochures and flyers. As the Centre's research matures and develops, the KTE function will continue to increase into Year 5 and beyond.

In Year 5, the following are some of the KTE initiatives that are being planned:

- Engaging stakeholders as research partners is becoming part of the way that prevention and intervention research at the Centre is conducted and this way of doing research will be fully developed in Year 5. Engaging stakeholders as research partners is a core component for the new Burden grant that was awarded at the end of 2012 by the CCSRI. The research for this grant was initiated in this calendar year. The major stakeholder partner on this grant is the CCS-Ontario Division. Our research partners are involved and consulted at every step of the research

to ensure the relevance of the research to the CCS mandate and vision, and to engage their very large network in the future dissemination of the findings of the research.

- Other studies that are now following the model of "integrated KT" include a small intervention study that is hoping to receive funding in Year 5. The following stakeholders have made the commitment to help the research team: the Mayor of the City of Sarnia Mike Bradley, the M.P.P of Sarnia-Lambton, the Sarnia-Lambton Environmental Association (an umbrella organization representing 20 industrial manufacturers), the Occupational Health Clinics for Ontario Workers, the Ontario Building Trades, the Communications, Energy and Paperworkers Union of Canada, the Victims of Chemical Valley, the Rotary Club of Sarnia, and the Community Health Study Board of Sarnia. On a second study, also hoping to receive funding in Year 5, the Mayor of the City of Sarnia has actually become a research collaborator. A third study that has just received funding from the Research Advisory Council, not only has support from employers and labour, but also has the Chief Physician of the Occupational Health and Safety Branch (OHSB) of the Ontario Ministry of Labour, Dr. Leon Genesove, as a research collaborator.

- In Year 5, the Centre will continue to write plain language synthesis reports that are eminently accessible and useful to policy decision makers. They provide public health practitioners and policy makers with the necessary evidence to regulate occupational and/or environmental exposures. For example, one report that will be launched in Year 5 is a review of all the epidemiology research looking at the associations between risk factors and different cancer sites. The Centre has been working with the Prevention and Surveillance Unit at CCO on this report. The Centre's contribution to this important document has been the sections on occupational and environmental risk factors for cancer including radiation (other than UV), dusts & fibres, metals, industrial chemicals and complex mixtures. This report will be disseminated widely by the Centre and CCO. A second report that will be disseminated in Year 5 is on occupational exposure to asbestos over time and across different regions of Ontario. It is an analysis of administrative data from the Ontario Asbestos Registry. It aims to describe the characteristics of workers exposed to asbestos.

- Paul Demers gives regular media interviews and presentations to professional groups, funder groups, and at occupational health & safety stakeholder conferences. The Centre staff also present and have posters at academic and stakeholder conferences. In year 5, Paul Demers and different staff members will be giving oral presentations or submitting posters to a number of academic and stakeholder conferences including: the International Student Energy Summit; the American Industrial Hygiene Conference and Exposition; the Scientific Committee on Epidemiology in Occupational Health which is part of ICOH (International Commission on Occupational Health); The Ontario Public Health Convention; and the Canadian Society for Epidemiology and Biostatistics. We will also have a strong presence at Partners in Prevention at the end of May with four posters, and research associates will attend Forum North 2013 in Thunder Bay in November. In the Appendices, we have listed both past presentations and those we have committed to for Year 5.

- The three-year review panel recommended that the Centre hires a knowledge broker, and the CCO has given the Centre the mandate to develop policy-relevant messages to advice government – a function of a knowledge broker. Hiring someone with content knowledge of occupational cancer and KTE skills will be a challenge, but we are committed to doing this in Year 5. This policy-level intensive engagement is part of the Centre's KTE strategy. And hence, having the services of a knowledge broker is already part of the KT strategy of the Burden grant; the Canadian Cancer Society's Ontario branch will be seconding one of their staff to the knowledge broker function in the fourth year of the Burden project.

- The website is kept up to date and remains the major place for the Centre to post all of its communication. In Year 5 we are planning to refresh the website by creating a new Home page and making a stronger delineation between the three aspects of the research portfolio: Intervention & Prevention; Surveillance; and Causation. This will have implications for the inner logic of the website as information on our researchers, projects, manuscripts, and posters get divided up. In the last couple of months, worth noting on the website, is that we have 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 that was recently published on the increased risk of workers in the plastic industry to breast cancer. In January, we posted the presentations and discussions that emerged from the symposium we held on shiftwork interventions in November 2012. We have also recently 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 be populated and used in Year 5. In the beginning of Year 5, we will post a number of educational modules that captures 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.

Strategy IV: Building a Sustainable Research Centre

The highest priority for Year 5 will be ensuring a smooth recommitment of the contract between the three major funders of the Centre: Ministry of Labour, Canadian Cancer Society – Ontario Division, and Cancer Care Ontario. CCO has increased its commitment to OCRC for the coming year to support prevention initiatives within Prevention and Cancer Control portfolio. We have already initiated the discussion of recommitment within CCO.

OCRC will also continue to apply for competitive research funding from the Canadian Cancer Society Research Institute, the Canadian Institutes for Health Research, and other sources. Through the efforts of the CCS-ON there is also a possibility of a private donor in the mining sector giving a large grant to OCRC to study the occupational cancers associated with the mining sector. This donation would come through the Canadian Cancer Society's Research Institute.

Appendix 1: Scientists

Name	Affiliations	OCRC-related Activities
Dr. Paul Demers	· Director, OCRC · 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 or engaged at some level in all projects listed in Appendices 5-7
Dr. Desre Kramer	· Associate Director, OCRC · Adjunct Professor, University of Waterloo, · Adjunct Professor, Ryerson University · Adjunct Researcher, Institute for Work & Health	· Making the link between exposure and respiratory cancer in the clinical setting: What are the steps? · Assessing exposure to antineoplastic drugs in Ontario healthcare workers · Assessment of the human and economic costs of occupational cancer · Review of compensated workplace fatality trends and patterns · Awareness to behavior · Development of an Ontario workplace exposure database · Interventions mitigating health risks among shift workers: Current knowledge and workplace practices
Dr. Shelley Harris	· Associate Professor, Dalla Lana School of Public Health, University of Toronto · Scientist, Cancer Care Ontario	· Cross-Canada Study of Pesticides · 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
Dr. Loraine Marrett	· Senior Scientist and Director, Surveillance Unit, Cancer Care Ontario · Professor, Dalla Lana School of Public Health, University of Toronto	· 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	· Senior Investigator, Samuel Lunenfeld Research Institute, Mount Sinai Hospital · Professor, Dalla Lana School of Public Health, University of Toronto · Founding Director, Ontario Health Study	· Cross-Canada Study of Pesticides · 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	· Epidemiologist, Public Health Agency of Canada · Research Fellow, R. Samuel McLaughlin Centre for Population Health Risk Assessment, University of Ottawa	· 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. Chun-Yip Hon	· Assistant Professor, Ryerson University	· Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files · Analyses of the Ontario MoL exposure database (MESU)
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. Anne Harris	· Assistant Professor, Ryerson University	· 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. 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 · 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. 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
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. 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

Appendix 3: Research Associates

Name	Education	Projects
Dr. Anna Koné (Senior Research Associate)	MSc (Community Health), University of Montreal (2002) PhD (Public Health, Epidemiology), University of Montreal (2008)	· Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort · Development of an Occupational Cancer surveillance Program for Ontario
Dr. Ann Del Bianco (Senior Research Associate)	MES (Environmental Causes of Esophageal Cancer), York University (2003) PhD (Environmental Studies), York University (2012) Adjunct Professor, Faculty of Environmental Studies, York University	· Assessing exposure to antineoplastic drugs in Ontario healthcare workers · 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 · Ministry of Labour Asbestos Registry
Kate Jardine	MSc (Chemistry), University of Toronto (2010)	· Toronto Lung Cancer Case-Control Study · Analyses of the Ontario MoL exposure database (MESU) – exposure to nickel in Ontario, 1981-1996 · Creation of a database of Canadian studies that have measured exposure to workplace carcinogens · Libby Sister Sites in Ontario Investigation · Women and minorities and other trends in occupational cancer research: An update · Development of an Ontario workplace exposure database
Linda Kachuri	MPH (Epidemiology), University of Toronto (2012)	· 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 · Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure · Occupational exposure to diesel and gasoline engine emissions and the incidence of colorectal and bladder cancer in Canadian men · Occupational exposure to silica and the risk of lung cancer in Canadian men
Alison McKenzie (part-time)	MSc (Occupational and Environmental Hygiene), University of British Columbia (2012)	· Online cancer risk assessment tool
Kris Moore	MA (Political Science), York University (2010)	· Making the link between exposure and respiratory cancer in the clinical setting: What are the steps? · Assessing exposure to antineoplastic drugs in Ontario healthcare workers · Awareness to behavior · Development of an Ontario workplace exposure database
Garthika Navaranjan	MPH (Epidemiology), University of Toronto (2012)	· 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 · Cancer in Ontario: Risk Factors – a set of focused modules · Occupational cancer surveillance using the 1991-2006 Canadian census mortality & cancer cohort
Manisha Pahwa	MPH (Occupational and Environmental Health), University of Toronto (2011)	· Cross-Canada Study of Pesticides · 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 · Ministry of Labour Asbestos Registry

Continued – Appendix 3		
Priyanka Raj	MPH (Occupational and Environmental Health), University of Toronto (2010)	· Creation of a database of Canadian studies that have measured exposure to workplace carcinogens · Assessing exposure to antineoplastic drugs in Ontario healthcare workers · Libby Sister Sites in Ontario Investigation · Women and minorities and other trends in occupational cancer research: An update · Assessment of the human and economic costs of occupational cancer · Development of an Ontario workplace exposure database
Karin Hohenadel (part-time)	MSc (Health Studies and Bioethics), University of Toronto (2007)	· Cross-Canada Study of Pesticides · Women and minorities and other trends in occupational cancer research: An update · Systematic review of interventions for the prevention of occupational cancer

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 2013-present	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 2013-present	Paul Demers	· Linkage of 1991 Census (20% sample) with tumour registry data – Cancer in miners
Renata Musa	MPH Practicum, Occupational and Environmental Health, DLSPH, U of T	Sept 2012-present	Shelley Harris	· Male breast cancer/EMF project
Joanne Kim	MPH Masters Project, Occupational and Environmental Health, DLSPH, U of T	July 2011-present	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
Caryn Thompson	MPH Practicum, Epidemiology, DLSPH, U of T	2011-present	Shelley Harris	· Exposures to emerging environmental contaminants and risk of breast cancer in young women: a case-control study using biomarkers of exposure · Male breast cancer project/EMF project
Linda Kachuri	MPH Practicum, Epidemiology, DLSPH, U of T	Jan-Aug 2012	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
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
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	· 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
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
Lua Eriksson	MPH Practicum, Community Medicine, DLSPH, U of T	April-Sept 2011	Paul Demers	· Linkage of 1991 Census (20% sample) with tumour registry data – occupations and ovarian cancer
Dr. Patricia Lui (completed PhD in May 2011)	Ph.D. Program, Institute for the History and Philosophy of Science & Technology, U of T	Jan-May 2011	Paul Demers	· History of Occupational Cancer Research in Ontario
Manisha Pahwa	MPH Masters Project, Occupational and Environmental Health, DLSPH, U of T	2009-2011	Shelley Harris	· Cross-Canada Study of Pesticides – pesticide exposure, immunologic conditions, and the risk of non-Hodgkin lymphoma

Appendix 5: Identification of Causes of Cancer in the Workplace

Project	Broad Objectives	OCRC Team and Collaborators	Funder, Budget and Timeline	Accomplishments/Plans Thus Far
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	*Staff:* Linda Kachuri *Scientists:* Shelley Harris (PI), Paul Villeneuve *Collaborators:* Kenneth Johnson (Public Health Agency of Canada), Marie-Elise Parent (Institut national de la recherché scientifique, Quebec)	2012-2013	· Data have been transferred from PHAC to OCRC · Data analysis plan has been prepared and statistical analysis has commenced
Male breast cancer/EMF project	To use the National Enhanced Cancer Surveillance System data to study male breast cancer and electromagnetic fields	*Students:* Renata Musa, Caryn Thompson *Scientists:* Shelley Harris, Paul Villeneuve, Paul Demers	Core funding	· Data set has been transferred from PHAC to OCRC
Cross-Canada Study of Pesticides · The effects of multiple pesticides in combination on cancer risk · The potential for immunologic conditions and family history to act as effect modifiers for pesticides and 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	*Staff:* Manisha Pahwa, Garthika Navaranjan, Linda Kachuri *Scientists:* Shelley Harris (PI), Paul Demers, John McLaughlin, Aaron Blair *Collaborators:* John Spinelli (BC Cancer Agency), Punam Pahwa & James Dosman (University of Sask.), Nichole Garzia (UBC), Karin Hohenadel (PHO), Laura Beane-Freeman (US NCI)	Core funding Multiple projects with ongoing analyses Beginning pooled analyses with US NCI	· NHL multiple pesticides paper published in 2011 and presented at the North American Congress of Epidemiology · NHL, pesticides, & immunologic conditions paper by Manisha Pahwa published in 2012 · HL pesticides paper by Garthika Navaranjan submitted for publication · MM pesticides analysis manuscript by Linda Kachuri submitted for publication · Pooled analyses with US studies in progress · Symposium held at CARWH 2012 meeting
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	*Staff:* Kate Jardine *Students:* Jill Hardt, Desiree Latour *Scientists:* John McLaughlin (co-PI), Paul Demers (co-PI) *Collaborators:* Kurt Straif (International Agency for Research on Cancer), Hans Kromhout & Roel Vermeullen (Utrecht University)	Toronto Analyses: Core funding Ongoing analyses Possible future analyses of the SYNERGY pooled data	· Analyses of the Toronto data by Desiree Latour and Jill Hardt in progress · Poster by Jill Hardt presented at X2012 meeting · Collaborate with international investigators on pooled analyses

Continued – Appendix 5				
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	*Staff:* Linda Kachuri *Scientists:* Shelley Harris (PI), Paul Villeneuve *Collaborators:* Michelle Cotterchio, Gil Valencia (CCO), Len Ritter (University of Guelph), Julia Knight (U of T)	CCSRI $846,000 2011-2014	· 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 will begin fall of 2012
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	*Staff:* Minh Do (Co-PI) *Scientists:* Loraine Marrett (Co-PI), John McLaughlin, Paul Demers *Collaborators:* Elisabeth Cardis (CREAL, Barcelona)	WSIB RAC $29,000 Complete in 2012	· Feasibility study nearing completion
Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files Creation of a pooled dataset of all 3 Canadian uranium miners studies	To continue to assess the risk of cancer, as well as cardiovascular disease among Ontario uranium miners	*Staff:* Minh Do *Scientists:* Loraine Marrett (PI), Paul Demers , John McLaughlin, Shelley Harris, Paul Villeneuve *Collaborators:* Members of the National Uranium Miners Working Group	Linkage funded by Canadian Nuclear Safety Commission Contract in negotiation for analysis (~$150,000) 2012-2014	· Finalize agreement for external funding · Linkage completed at Statistics Canada · Conduct analyses
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	*Staff:* Linda Kachuri *Scientists:* Shelley Harris (PI), Paul Villeneuve *Collaborators:* Kenneth Johnson (Public Health Agency of Canada), Marie-Elise Parent (Institut national de la recherché scientifique (INRS), Quebec)	WSIB RAC $161,000 2011-2013	· 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 Nov/Dec 2012

Appendix 6: Surveillance of Occupational Cancer and Carcinogens

Project	Broad Objectives	OCRC Team and Collaborators	Funder, Budget and Timeline	Accomplishments/Plans Thus Far
Development of an Ontario workplace exposure database	To find sources of occupational exposure data in Ontario and create a database so that the data can be analyzed for surveillance and prevention purposes	*Staff:* Kate Jardine, Priyanka Raj, Kris Moore *Scientists:* Paul Demers (PI), Desre Kramer *Collaborators:* Leon Genesove	Application submitted to WSIB RAC Bridging the Gap for $59,000 for mining exposures 2013	· Feasibility study of collection of mining exposure data in the planning stages
Ministry of Labour Asbestos Registry	To examine patterns and trends of worker exposure to asbestos	*Staff:* Ann Del Bianco, Manisha Pahwa *Students:* Jill Hardt *Scientists:* Paul Demers	Core funding 2012-2013	· In the process of cleaning the database and requesting better quality data from the MOL
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	*Scientists:* Victoria Arrandale, Paul Demers *Collaborators:* Stephen Bornstein, Barbara Nies (MUN), Chris McLeod, Mieke Koehoorn (UBC)	$49,000 from Worksafe BC with WCB of Nova Scotia and Alberta Human Services. Funds held at MUN. 2012-2013	· Initial scan completed and review underway
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	*Staff:* Manisha Pahwa, Garthika Navaranjan, Linda Kachuri, Anna Koné *Students:* Jill Hardt, Lua Eiriksson, Marcella Jones, Trevor van Ingen *Scientists:* Paul Demers, Anne Harris *Collaborators:* Michael Tjepkema, Paul Peters (Statistics Canada), CAREX Canada, Nordic Occupational Cancer Group, Finnish Institute for Occupational Health, Rick Burnett (Health Canada)	Initially core funded Currently funded by the WSIB-RAC $312,000 2012-2015	· Initial round of feasibility work/pilot analyses completed · Paper on welders in preparation · Paper on ovarian cancer in preparation · Presentations to US NCI and NOCCA group · Results on firefighters presented at CARWH · Presented on the data linkage at NAACCR · Abstract on ovarian cancer submitted to Society of Gynecologic Oncology meeting · Analysis of occupational physical activity and colorectal cancer in progress · Analyses of shiftwork levels using SLID · Analyses by exposure using MESU & CAREX being explored · Waiting for extended follow-up of cohort
Development of an Occupational Cancer surveillance Program for Ontario	To create a new occupational surveillance platform based only on Ontario data	*Staff:* Anna Koné *Scientists:* Paul Demers, Loraine Marrett, Anne Harris	Funded by WSIB RAC $29,800 2012-2013	· Ethics completed · Data access permissions granted · Awaiting data for linkage
Cancer Among Nordic Firefighters	To collaborate with the NOCCA Study Group on a topic of mutual interest	*Scientists:* Paul Demers *Collaborators:* Nordic Occupational Cancer Group, Finnish Institute for Occupational Health	Core funded Complete in 2012	· Results from NOCCA study for firefighters supplied by Norwegian Tumour Registry · Results presented at EPICOH · Manuscript in preparation

Continued – Appendix 6				
Mesothelioma patterns and projections in Ontario and Canada	To predict future trends in mesothelioma in Ontario and the rest of Canada	*Scientists:* Loraine Marrett (Co-PI), Paul Demers *Collaborators:* Mark Clements (Co-PI) (Australian National University)	Core funding Complete in 2012	· Manuscript in preparation
Analyses of the Ontario MoL exposure database (MESU)	To examine historical patterns of exposure to carcinogens in Ontario To use this data in collaboration with CAREX to create exposure matrixes that can be used for cancer surveillance and research	*Staff:* Kate Jardine, Garthika Navaranjan *Students:* Joanne Kim *Scientists:* Paul Demers (PI), Victoria Arrandale *Collaborators:* Cheryl Peters (CAREX Canada)	CAREX Canada and core funding Ongoing analyses	· Analyses using MESU dataset in progress · Reports on exposure to carcinogens in Ontario (1981-1996) in progress: wood dust and school teachers; tetrachloroethylene; nickel · Creation of exposure matrixes for use with 1991 Census and Burden projects in progress
Sinonasal cancer surveillance and exposure to sinonasal carcinogens in Ontario	To examine the descriptive epidemiology of sino-nasal cancer in relation to trends in exposure in Ontario	*Scientists:* Paul Demers (PI), Victoria Arrandale, Anne Harris *Collaborators:* Chris McLeod, Mieke Koehoorn, Cheryl Peters (University of British Columbia)	Core funding Completed in 2011	· Project completed - analysis of tumour registry data complete and Cancer Fact released · Analysis of MESU exposure data complete · Comparison with parallel project in BC completed · Presented at CCRA research conference

Appendix 7: Intervention, Prevention, Systematic Reviews, and Other Projects

Project	Broad Objectives	OCRC Team and Collaborators	Funder, Budget and Timeline	Accomplishments/Plans Thus Far
Cancer in Ontario Risk Factors Report	To provide a summary of the epidemiologic evidence linking risk factors to common cancers To provide a series of reports examining the prevalence of risk factors in Ontario	*Staff:* Garthika Navaranjan, Ann Del Bianco *Students:* Joanne Kim *Scientists:* Paul Demers, Loraine Marrett *Collaborators:* Elisa Candido, Beth Theis (CCO Surveillance Unit)	Core funding Complete in 2013	· OCRC is examining the occupational and environmental risk factors · Report to be released January 2013 · Abstract for poster presentation to be submitted for the Ontario Public Health Convention
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	*Staff:* Manisha Pahwa *Scientists:* Paul Demers (PI), Kristan Aronson (Co-I), Desre Kramer *Collaborators:* Cam Mustard (IWH, Co-I), Ron Saunders (IWH), Carolyn Gotay (UBC), Sarah Neil (UBC)	WSIB Bridging the Gap #10115 Complete December 2012	· Report on stakeholder survey of 500 respondents completed, published on web · Systematic literature review of interventions in progress · Symposium on November 6 in Toronto · Oral presentation at Forum North in November
Awareness to behavior	To determine what policies and practices to reduce workers' exposure to toxins are economically feasible and effective, and what are the barriers to change	*Staff:* Kris Moore, Ann Del Bianco *Scientists:* Desre Kramer (Co-PI) *Collaborators:* Linn Holness (Co-PI), Irena Kudla (St. Michael's Hospital)	Application sent to WSIB RAC Bridging the Gap for $60,000 2013	· Awaiting decision of WSIB RAC
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	*Staff:* Ann Del Bianco *Scientists:* Paul Demers *Collaborators:* 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	· Initial scan completed and review underway
Development of regional priorities for occupational cancer in Ontario	To determine priorities for interventions to prevent occupational cancer at a regional level in Ontario	*Staff:* Alison McKenzie *Scientists:* Paul Demers *Collaborators:* Perry Hystad (CAREX Canada)	CCO Prevention funding Total $70,000 for fiscal year 2012/13 for several projects Anticipated approximately $90,000 for fiscal year 2013/14)	· 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	Explore the development of cancer prevention and risk factor indicators under the CSQI framework	*Staff:* Alison McKenzie *Scientists:* Paul Demers *Collaborators:* Perry Hystad (CAREX Canada)		· Initial meeting held · Perry Hystad to visit OCRC in November and attend a meeting of the Commission on Environmental Cooperation on health indicators and vulnerable communities
Online cancer risk assessment tool	To create the occupational module of an online tool for assessing cancer risk	*Staff:* Alison McKenzie *Scientists:* Paul Demers *Collaborators:* Anne-Marie Nicol (UBC)		· OCRC is adding an occupational portion to the online risk assessment tool being developed by CCO · Search for funding opportunities underway · Prototype development underway

Continued – Appendix 7				
Assessment of the human and economic costs of occupational cancer	To raise awareness of the human and economic impacts of exposure to occupational carcinogens	*Staff:* Ann Del Bianco, Manisha Pahwa, Priyanka Raj *Students:* Joanne Kim *Scientists:* Paul Demers (PI), Desre Kramer (co-PI) *Collaborators:* 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 Application to CCSRI for $1,000,000 2012-2016	· Hosted meeting in Toronto with investigators of similar projects in Alberta, Quebec, UK, United States · Preliminary work underway while awaiting decision from CCSRI (decision due in October)
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	*Staff:* Priyanka Raj, Kate Jardine *Scientists:* Aaron Blair (PI), Paul Demers *Collaborators:* Sheila Hoar Zahm (U.S. National Cancer Institute) , Karin Hohenadel (PHO)	Core funding Complete in 2012	· Manuscript on trends in occupational cancer research in preparation · Manuscript on the inclusion of women in occupational cancer research in preparation
Creation of a database of Canadian studies that have measured exposure to workplace carcinogens	To contribute to CAREX to help fill in gaps in our knowledge of exposure in Canada To develop a database of Canadian studies for the Burden project and other uses	*Staff:* Priyanka Raj, Kate Jardine *Scientist*: Paul Demers *Collaborators*: Calvin Ge, Cheryl Peters (CAREX Canada)	Core funding Complete in 2012	· Database finalized except for French language publications · Poster presented at CARWH
History of occupational cancer research in Ontario and Canada	To raise awareness about the role of Ontario in the history of occupational cancer research	*Students:* Patricia Liu *Scientists:* Paul Demers	Core funding Completed in 2011/12	· Final draft in preparation
Libby Sister Sites in Ontario Investigation	To identify sites where asbestos-contaminated vermiculite was shipped in Ontario	*Staff:* Priyanka Raj, Kate Jardine *Scientist*: Paul Demers *Collaborators*: Cheryl Peters, Alejandro Cervantes (CAREX Canada)	Core funding Complete in 2012	· Database acquired from US EPA sent by CAREX Canada · Identification of sites underway · Report in preparation
A comparison of Ontario Occupational Exposure Limits for Carcinogens to other jurisdictions in Canada and elsewhere	To raise awareness regarding occupational exposure limits in Ontario To prepare a submission to the MoL's annual OEL Update Project	*Staff:* Manisha Pahwa *Scientist*: Paul Demers *Collaborators*: Cheryl Peters, Calvin Ge (CAREX Canada)	Core funding Completed in 2012	· Recommendations submitted to MoL · Final report completed

Continued – Appendix 7				
Review of Compensated Workplace Fatality Trends and Patterns	Update of the 2006 "5 Deaths a Day Report" focusing on compensated cancer and occupational disease in Ontario and Canada	*Staff:* Ann Del Bianco *Scientists:* Paul Demers, Desre Kramer	Core funded Complete in 2012	· Cancer Fact completed · Brochure prepared for Day of Mourning · Report completed · Results presented at CARWH · Poster presented at Partners in Prevention · Results to be presented at Forum North · Manuscript in preparation
Making the link between exposure and respiratory cancer in the clinical setting: What are the steps?	Pilot study to identify optimal methods of occupational history taking and referral for workers' compensation Extension of initial pilot study to multiple centres across Ontario	*Staff:* Kris Moore, Ann Del Bianco *Scientists:* Desre Kramer, Loraine Marrett (Co-PI) *Collaborators:* Linn Holness (Co-PI), Irena Kulda (St. Michael's Hospital), John Oudyk (OHCOW)	WISB RAC $30,000 (Pilot) Pilot study complete in 2011/12 Extension to centres across Ontario planned	· Pilot study completed in 2012 · Results of Juravinski pilot study presented at CARWH 2012 · Report submitted to WSIB · Manuscript in preparation · Preliminary plans for broader provincial roll-out of project underway
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 feasibility of long-term surveillance of exposed healthcare workers	*Staff:* Kris Moore, Priyanka Raj, Ann Del Bianco *Scientists:* Paul Demers, Desre Kramer, John McLaughlin (Lunenfeld)	Initial funding by Juravinski for pilot work and questionnaire $50,000 (tentative) 2012/13	· Pilot study includes questionnaire with history of exposure and multiple interviews · Ethics application submitted to Hamilton Health Sciences · Presentation made to Juravinski staff and management
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	*Scientists:* Aaron Blair (PI), Paul Demers *Collaborators:* Karin Hohenadel (PHO), Kurt Straif (IARC)	Core funding Complete asbestos in 2012	· Presented at EPICOH in Oxford · Manuscript for asbestos in preparation

Appendix 8: Grants

Table 1: Grants housed at OCRC

Research Project	Funder	Principal Investigator(s)	Co-Investigators(s)	Budget	Timeline
Development of an Ontario mining exposure database	WSIB RAC	Demers PA	Genesove L, Kramer D	$59,900	2013-2014
The Human and Economic Burden of Occupational Cancer in Canada	Canadian Cancer Society Research Institute	Demers PA	Davies H, Tompa E, Kramer D, Nicol AM, Lavoué J, Labreche F, Curly P, Rushton L, Hyatt D, McLeod C, Bouma S	$1,000,000	2012-2015
Occupational Cancer Surveillance using the 1991-2006 Canadian Census Mortality & Cancer cohort	WSIB	Demers PA	Harris A	$312,570	2012-2015
Ontario uranium miner cohort: Linkage with national mortality and cancer incidence files	Canadian Nuclear Safety Commission	McLaughlin JR	Do M, Harris SA, Marrett LD, Members of the National Uranium Miners Working Group	$150,000	2012-2014
Surveillance of occupational cancer through linkage of WSIB data to Ontario Cancer Registry	WSIB	Demers PA	Harris A, Koehoorn M, McLeod C	$29,800	2012-2013
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	Harris SA	Cotterchio M, Knight J, Ritter L, Villeneuve P	$846,000	2011-2014
Health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation: A feasibility study	WSIB RAC	Marrett LD, Do M	McLaughlin J, Cardis E	$29,000	2011-2013
Interventions mediating health risks among shift workers: Current knowledge and workplace practices	WSIB RAC	Demers PA	Mustard C, Aronson K	$52,250	2011-2013
Occupational exposure to diesel and gasoline engine emissions and the incidence of colorectal and bladder cancer in Canadian men	WSIB RAC	Harris SA	Villeneuve P, Johnson K, Parent M	$160,880	2010-2013

Table 2: Grants pending

Research Project	Funder	Principal Investigator(s)	Co-Investigators(s)	Budget	Timeline
The Risk of Cancer Amongst Canadian Miners	Canadian Cancer Society private funding	Demers PA	Kramer D	Pending	Pending
Striking a Balance: Perceptions of Quality of Life in Employment, Health, and Personal Roles among women with breast cancer	Canadian Cancer Society Research Institute	Gignac M, Del Bianco A	Kramer D	$200,000	Pending (2013-2015)
From awareness to behavior: exploring the impact of heightened awareness of workplace carcinogens in Sarnia	Canadian Cancer Society Research Institute	Kramer D, Holness L	Kudla I, Moore K, Del Bianco A	$120,000	Pending (2013-2014)
Pooled analyses of pesticides, agricultural exposures and select cancers: Developing research priorities and disseminating knowledge with stakeholders	Canadian Institutes of Health Research	Harris SA	Pahwa M, Beane-Freeman L, Kramer D, Demers PA, Blair A	$25,000	Pending (2013)
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	Kramer D	Holness L, Moore K, Kudla I, DelBianco A	$100,000	Pending (2013)

Table 3: Grants housed outside of OCRC

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

Appendix 9: Publications

Table 1: Peer-Reviewed Publications

Citation	PubMed ID	Open Access	Journal Impact Factor*
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* (manuscript submitted January 2013)	N/A	N/A	2.88
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).	N/A	N/A	N/A
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).	N/A	N/A	0.262
Hon C-Y, Teschke K, Chu W, Demers PA, Venners S. Antineoplastic drug contamination of surfaces throughout the hospital medication system in Canadian hospitals. *Journal of Occupational and Environmental Hygiene* (manuscript submitted October 2012).	N/A	N/A	1.293
Kachuri L, Demers PA, Blair A, Pahwa M, Spinelli JJ, Pahwa P, McLaughlin JR, Dosman JA, Harris SA. Exposures to multiple pesticides and the risk of multiple myeloma in Canadian men. *International Journal of Cancer* (manuscript submitted October 2012).	N/A	N/A	4.926
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. *Annals of Occupational Hygiene* (manuscript submitted September 2012).	N/A	N/A	2.014
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).	N/A	N/A	5.745
Setton E, Hystad P, Poplawski K, Cheasley R, Cervantes A, Keller CP, Demers PA. Risk-based indicators of Canadian's exposures to environmental carcinogens. *Environmental Research* (manuscript submitted September 2012).	N/A	N/A	3.5
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. *Preventative Medicine* (manuscript submitted August 2012).	N/A	N/A	3.773
Harris SA, Boucher BA, Cotterchio M. Will women diagnosed with breast cancer provide biological samples for research purposes? *Cancer Epidemiology* (manuscript submitted March 2012).	N/A	N/A	1.182
Peters CE, Nicol AM, Demers PA. Prevalence of exposure to solar radiation (UVR) on the job in Canada. *Canadian Journal of Public Health* (manuscript accepted March 2012).	N/A	N/A	N/A
Hon C-Y, Teschke K, Chu W, Demers PA, Astrakianakis G. Identification of determinants of antineoplastic drug contamination of work surfaces throughout the hospital medication system. *Annals of Occupational Hygiene* (manuscript submitted October 2011).	N/A	N/A	2.014
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* (Epub December 2012).	N/A	N/A	2.795

*ISI Web of Knowledge Journal Citation Reports 2010

Table 2: Non-Refereed Publications

Title	Authors	Description	Status
Putting carcinogens into context: understanding the International Agency for Research on Cancer's ratings	Jardine K, Demers PA	Ontario Cancer Fact	February 2013
Cancer Risk Factors in Ontario: Evidence Summary	Candido E, Theis B, Marrett LD, Navaranjan G, Del Bianco A, Demers PA	Report	Final draft under revision
Occupational Exposures to Nickel and Nickel Compounds in Ontario	Jardine K, Arrandale VH, Peters CE, Demers PA	Report	In preparation
Occupational Exposures to Trichloroethylene in Ontario	Navaranjan G, Arrandale VH, Peters CE, Jardine KJ, Demers PA	Report	In preparation
Occupational Exposures to Tetrachloroethylene in Ontario	Navaranjan G, Arrandale VH, Peters CE, Jardine KJ, Demers PA	Report	In preparation
Characterizing occupational asbestos exposure in Ontario	Koné A, Moore K, Del Bianco A, Kramer D, Demers PA	Report	In preparation
Occupational asbestos exposure in Ontario	Koné A, Moore K, Del Bianco A, Kramer D, Demers PA	Article, "News from the CREs" in the IWH *At Work* Newsletter	In preparation
A feasibility study of health risks among nuclear workers in Ontario who have been exposed to internal sources of ionizing radiation	Do M, Demers PA	Report	In preparation
Educational offerings in health and safety in Canadian post-secondary institutions	Curran V, Hayward M, Bornstein S, Demers PA, Bartlett K, Davies H, LeFort S, MacKinnon S, Neis B, Miller S	Report	In preparation
The history of occupational cancer research in Ontario and Canada	Liu P, Demers PA	Report	Final draft in preparation

Table 3: Manuscripts in Preparation

Citation
Kim J, Peters C, Demers P. The burden of occupational cancer attributable to diesel engine exhaust exposure.
Koné A, Moore K, Del Bianco A, Kramer D, Demers PA. Characterizing occupational asbestos exposure in Ontario. *Canadian Journal of Public Health*.
Moore K, Kramer D, Kudla I, Oudyk J, Marrett LD, 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*.
Del Bianco A, Demers PA. Compensated occupational cancer fatality claims are on the rise. *Canadian Medical Association Journal*.
Neil S, Pahwa M, Demers PA, Gotay C. A systematic review of health-related interventions in shift workers exposed to light at night.
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.
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.*
Harris MA, Tjepkema M, Peters PA, Demers PA. Firefighter and police cancer risk surveillance in a national population-based cohort.
Hardt J, Harris MA, Tjepkema M, Peters PA, Demers PA. Welding and lung cancer: a population-based cohort study, Canada, 1991-2003.
Eiriksson L, Harris MA, Tjepkema M, Peters PA, Demers PA. Occupational exposures and ovarian cancer: a national population-based cohort study.
Raj P, Hohenadel K, Demers PA, Zahm S, Blair A. Trends in published occupational cancer epidemiological research: Results from a comprehensive review of the literature. *American Journal of Industrial Medicine*.
Hohenadel K, Straif K, Demers PA, Blair A. The effectiveness of asbestos-related interventions in reducing rates of lung cancer and mesothelioma: a review.
Hohenadel K, Raj P, Stegne M, Demers PA, Blair A. The inclusion of women in occupational cancer research.
Demers PA, Martinsen JI, Weiderpass E, Kjaerheim K, Lynge E, Sparén P, Pukkala E. Cancer Incidence among Nordic Firefighters.
Clements M, Demers PA, Marrett L. Mesothelioma patterns and projections in Ontario and Canada.
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.
Do MT. Internal dose reconstruction of plutonium and uranium exposure of nuclear workers recruited for the case-control studies.
Do MT. Nested case-control studies of nuclear workers - Estimates of lung cancer risk associated with internal exposure to uranium and plutonium.
Do MT. Nested case-control studies of nuclear workers - Estimates of leukemia risk associated with internal exposure to uranium and plutonium.
Do MT. Ionizing radiation exposure and risk of gastrointestinal cancers: A study of the Ontario uranium miners.
Do MT. Gamma dose estimation for Ontario Uranium Miners: An ecological approach.

Table 4: Book chapters accepted for publication

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

Appendix 10: Conference Abstracts

Abstract	Presenters	Conference	Status
The burden of occupational cancer attributable to diesel engine exhaust exposure	Kim J, Peters C, Demers P	Canadian Cancer Research Conference. Toronto, Ontario, Nov 3-6, 2013	Oral presentation, in preparation
Occupational exposure to crystalline silica and the risk of lung cancer in Canadian men	Kachuri L, Harris SA, Parent ME, Johnson KC, the Canadian Cancer Registries Epidemiology Group, Villeneuve PJ	International Society for Environmental Epidemiology (ISEE) Annual Conference. Basel, Switzerland, August 19-23, 2013.	Oral presentation, submitted
Occupational exposure to nickel and nickel compounds in Ontario	Jardine K, Arrandale VH, Peters CE, Demers PA	Canadian Society for Epidemiology and Biostatistics (CSEB) Conference. St. John's, Newfoundland, June 24-27, 2013.	Oral presentation, submitted
Occupational Exposures to Tetrachloroethylene in Ontario	Navaranjan G, Arrandale VH, Peters CE, Jardine K, Demers PA	Canadian Society for Epidemiology and Biostatistics (CSEB) Conference. St. John's, Newfoundland, June 24-27, 2013.	Oral presentation, submitted
Recent Trends in Published Occupational Cancer Epidemiological Research: Results from a Comprehensive Review of the Literature	Raj P, Hohenadel K, Demers P, Zahm S, Blair A	Canadian Society of Epidemiology and Biostatistics (CSEB) Conference. St. John's, Newfoundland, June 24-27, 2013.	Oral presentation, submitted
Characterizing occupational exposure to asbestos in Ontario	Koné A, Moore K, Del Bianco A, Demers PA, Kramer D	Canadian Society for Epidemiology and Biostatistics (CSEB) Biennial Conference. St. John's, Newfoundland, June 24-27, 2013.	Oral presentation, submitted
Cancer risks among Canadian agricultural workers in a population-based cohort	Kachuri L, Harris MA, Peters PA, Tjepkema M, Demers PA	The Scientific Committee on Epidemiology in Occupational Health Conference (EPICOH). Utrecht, the Netherlands, June 18-21, 2013.	Oral presentation, accepted
Multiple pesticide exposures and the risk of multiple myeloma in Canadian men	Kachuri L, Demers PA, Blair A, Spinelli JJ, Pahwa M, McLaughlin JR, Pahwa P, Dosman JA, Harris SA	The Scientific Committee on Epidemiology in Occupational Health Conference (EPICOH). Utrecht, the Netherlands, June 18-21, 2013.	Oral presentation, accepted
Making the link from diagnosis to work-relatedness and compensation: evaluating a process to help workers with occupational cancer submit a claim to workers' compensation	Moore K, Kramer D, Kudla I, Oudyk J, Holness L	Canadian Centre for Applied Research in Cancer Control (ARCC) Conference. Vancouver, BC, May 27, 2013.	Oral presentation, submitted
What can be done to prevent the chronic health effects of shiftwork? A systematic review of the evidence	Neil S, Pahwa M, Gotay C, Demers PA	American Industrial Hygiene Conference and Exposition (AIHce). Montreal, Québec, May 18-24, 2013.	Oral presentation, submitted
Workplace fatalities are not what you think! The rise of occupational cancer	Del Bianco A, Demers PA	American Industrial Hygiene Conference and Exposition (AIHce). Montreal, Québec, May 18-24, 2013.	Oral presentation, submitted
The cross-border consequences of an American public health emergency: Exposure of Ontario workers to asbestos-contaminated vermiculite from Libby, Montana	Raj P, Jardine K, Cervantes A, Demers PA	The Ontario Public Health Convention. Toronto, Ontario, April 3-5, 2013.	Poster presentation, accepted
Rethinking important cancer risk factors in Ontario, Part I: A focus on the often forgotten and newly emerging	Candido E, Navaranjan G, Del Bianco A, Theis B, Demers PA, Marrett LD	The Ontario Public Health Convention 2013. Toronto, Ontario, April 3-5, 2013.	Poster presentation, accepted
Rethinking important cancer risk factors in Ontario, Part II: A focus on occupational and environmental exposures	Navaranjan G, Del Bianco A, Kim J, Candido E, Theis B, Marrett LD, Demers PA	The Ontario Public Health Convention 2013. Toronto, Ontario, April 3-5, 2013.	Poster presentation, accepted
Occupational cancer fatalities: A serious yet often overlooked public health issue	Del Bianco A, Demers PA	The Ontario Public Health Convention 2013. Toronto, Ontario, April 3-5, 2013.	Oral presentation, submitted
What can be done to prevent the chronic health effects of shiftwork? A systematic review of the evidence	Neil SE, Pahwa M, Gotay C, Demers PA	The Ontario Public Health Convention. Toronto, Ontario, April 3-5, 2013.	Poster presentation

Occupational exposures and ovarian cancer: A national population-based cohort study	Eiriksson L, Harris A, Tjepkema M, Peters PA, Demers PA	Society of Gynecologic Oncology 2013 Annual Meeting on Women's Cancer. Los Angeles, California, March 9-12, 2013.	Oral presentation, submitted

Appendix 11: Stakeholder Presentations

Title	Presenters	Conference	Status
Rethinking important cancer risk factors in Ontario, Part II: A focus on occupational and environmental exposures	Navaranjan G, Del Bianco A, Kim J, Candido E, Theis B, Marrett LD, Demers PA	Partners in Prevention. Mississauga, Ontario, April 30-May 1, 2013.	Poster presentation, accepted
The burden of occupational cancer attributable to diesel engine exhaust exposure	Kim J, Peters CE, Demers PA	Partners in Prevention. Mississauga, Ontario, April 30-May 1, 2013.	Poster presentation, accepted
Methods of estimating the human burden of occupational cancer in Canada	Demers PA, Kramer D, Del Bianco A, Pahwa M, Kim J	Partners in Prevention. Mississauga, Ontario, April 30-May 1, 2013.	Poster presentation, accepted
The OCRC and occupational cancer workplace fatalities	Del Bianco A, Demers PA	St. Michael's Hospital Occupational Medicine Rounds. Toronto, Ontario, April 17, 2013.	Invited oral presentation
Characterizing occupational exposure to asbestos in Ontario	Koné A, Genesove L, Moore K, Del Bianco A	Partners in Prevention. Mississauga, Ontario, April 30-May 1, 2013.	Poster presentation, accepted