



INFORMING EFFORTS TO REDUCE CANADIANS'
EXPOSURES TO KNOWN AND SUSPECTED CARCINOGENS
IN WORKPLACES AND COMMUNITIES

2015 - 2016 Annual Report

Background

CAREX (CARcinogen EXposure) Canada continues to act as the country's leading source of evidence on exposures to workplace and environmental carcinogens. In 2015-16, the CAREX team worked with partners at federal, provincial, and municipal levels to mobilize this evidence in various ways:

- We worked closely with the **Occupational Cancer Research Centre** to conduct and disseminate the **Burden of Occupational Cancer Study** (pg 6).
- We supported organizations like **WorkSafeBC** to prioritize the risk of workplace exposure to carcinogens such as crystalline silica (pg 9).
- We fostered connections and sparked action among **provincial governments and non-governmental organizations** on exposure to radon gas, a top priority in indoor air environments (pg 10).
- We completed a series of multi-year, collaborative projects on environmental quality in **First Nations communities** across Canada (pg 12).
- We developed a series of new profiles to help **public health professionals** interpret – and understand the implications of – the latest research on pesticides suspected of causing cancer (pg 14).

These are just a few ways that our work is informing cancer prevention efforts in Canada. We hope that the stories in this report illustrate the value that the CAREX project offers our prevention system. By monitoring emerging issues and integrating data, fostering networks and making knowledge accessible, we're working to enhance this country's capacity to assess and address Canadians' exposures to known and suspected carcinogens.

CAREX Canada is funded by the **Canadian Partnership Against Cancer**.



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PARTENARIAT CANADIEN
CONTRE LE CANCER

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Team Members

CAREX Canada is a multidisciplinary team of experts based at the **Faculty of Health Sciences (FHS)** at Simon Fraser University, working in collaboration with researchers at the **School of Population and Public Health (SPPH)** at the University of British Columbia, the **Department of Health Sciences (DHS)** at Carleton University, the **Spatial Sciences Research Lab (SSRL)** in the Geography Department at the University of Victoria, and the **Occupational Cancer Research Centre (OCRC)** at Cancer Care Ontario.



For a full list of contributors and biographies, please visit the [About Us](#) section of our website.

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SIMON FRASER UNIVERSITY
ENGAGING THE WORLD



Occupational
Cancer
Research
Centre



Carleton
UNIVERSITY








Knowledge Translation Advisory Committee

Our Knowledge Translation Advisory Committee helps to guide our efforts to mobilize CAREX resources and tools to support cancer prevention in Canada. Committee members represent various stakeholder groups, including **Toronto Public Health**, the **Workers' Compensation Board of Manitoba**, the **BC Ministry of Environment**, the **Canadian Cancer Society**, and others.



To view a full list of Committee members and their affiliations, visit our [Advisors page](#).

CAREX by the numbers 2015-2016



UNIQUE VISITS TO OUR WEBSITE with the average duration of sessions up 10% from last year (top hits include our Profiles and Estimates, Tools page, and Environmental radon estimate)	40,495	
ARTICLES, REPORTS, AND OFFICIAL DOCUMENTS referencing CAREX resources in the past year	35	
SUBSCRIBERS TO OUR NEWSLETTERS which now include a quarterly e-Bulletin and monthly Carcinogens in the News digest, a 29% increase from last year	1,026	
FOLLOWERS ON TWITTER (@CAREXCanada) a 36% increase from last year	491	
PRESENTATIONS ON VARIOUS TOPICS made by team members via conferences, workshops, face-to-face meetings, and webinars	43	
INDIVIDUALS who attended the 48 CAREX presentations	2,362	
TOOL AND INFORMATION REQUESTS (28% general public, 15% provincial and territorial governments, 12% academic, 12% professional associations, 9% health authorities, 6% local/regional government agency, 6% labour, 6% industry, 3% non-government organizations, 3% federal government)	60	

Highlights

Gathering stakeholders for a Burden of Occupational Cancer Symposium in BC

In late March we gathered occupational disease stakeholders from BC, the Yukon, and Alberta to share and discuss results from the **Burden of Occupational Cancer Project**, a four-year study led by the **Occupational Cancer Research Centre (OCRC)**, in close collaboration with CAREX Canada. The agenda focused on four priority exposures in Canadian workplaces: asbestos, diesel engine exhaust, silica dust, and solar radiation. The symposium saw attendees discussing and sharing ways that the project results can support efforts to prevent occupational cancer.

The Burden of Occupational Cancer project is the first study of its kind in Canada to estimate the number of newly diagnosed and fatal cancers that can be prevented by reducing exposure to workplace carcinogens. It is supported by the **Canadian Cancer Society Research Institute**. The approach to this study is based on a similar project conducted in the United Kingdom. However, the Canadian research team is currently leading the way in terms of study methodology. This is made possible through CAREX Canada's estimates of workplace exposure, which are directly applied in the burden calculation. For example, The Burden of Occupational Cancer study attributes approximately 1,900 lung cancers and 430 mesotheliomas to occupational asbestos exposure each year in Canada, which accounts for 8% of all lung cancers and 81% of all mesotheliomas diagnosed annually.



*About six people a day
are diagnosed with cancer
related to asbestos exposure
at work in Canada.*



• A common term for a group of naturally occurring, fibrous silicate minerals

• An IARC Group 1 carcinogen

- Lung cancer, mesothelioma (1973)
- Laryngeal cancer, ovarian cancer (2012)
- Suspected: colorectal, pharyngeal, and stomach cancer

• Other health effects

- Asbestosis (scar tissue in the lungs)

OCC CARER



A full event report that explains methodology, and presents both the results and participant input, is available on our Announcements page.



Canadian
Cancer
Society

Société
canadienne
du cancer



Occupational
Cancer
Research
Centre



“Occupational exposures are what keep us awake at night.”

- Al Johnson, Vice President of Prevention Services, WorkSafeBC

WORK SAFE BC



WorkSafeBC takes a risk of exposure approach to setting priorities

While the rate of workplace injuries is at an all-time low, **WorkSafeBC** has found the rate of workers dying of occupational disease exposures in BC is increasing. Their Risk Analysis Unit is working to change that by looking at hazards from a risk of exposure perspective. This approach is supported by the ongoing efforts of the working group that CAREX Canada established with WorkSafeBC in 2012. Under the occupational cancer pillar of their strategy, the Risk Analysis Unit is profiling many of the agents that CAREX results identify as high priority, including asbestos, diesel engine exhaust, crystalline silica, solar radiation, and wood dust.

With respect to exposure to crystalline silica, a substance that CAREX Canada estimates 380,000 Canadians are exposed to at work, WorkSafeBC has drafted new regulations that are expected to come into force in 2017 after public hearings. WorkSafeBC is also working with the BC Construction Safety Alliance on an online Silica Tool Project. Developed in partnership with CAREX Canada Advisor Hugh Davies based at UBC, this new tool will help employers to assess silica exposures and develop exposure control plans. The plans will assist employers in meeting the requirements of the new regulations, access current exposure data, be more knowledgeable about the hierarchy of controls, and ensure workplace practices align with controls.



“Given our work with CAREX, we looked at awareness with respect to silica and saw that we needed to improve.”

– Colin Murray, Senior Manager, Risk Analysis Unit, WorkSafeBC



Increasing our reach on radon

CAREX Canada risk estimates for indoor air carcinogens show that radon gas is the highest priority exposure in Canadian environmental settings. Our knowledge translation objective with respect to radon is to broker knowledge about exposures and act as a network hub, bringing stakeholders together to support actions aimed at reducing these exposures.

In 2015-16, we expanded our reach with respect to radon in the following ways:

Radon Policy and Law:

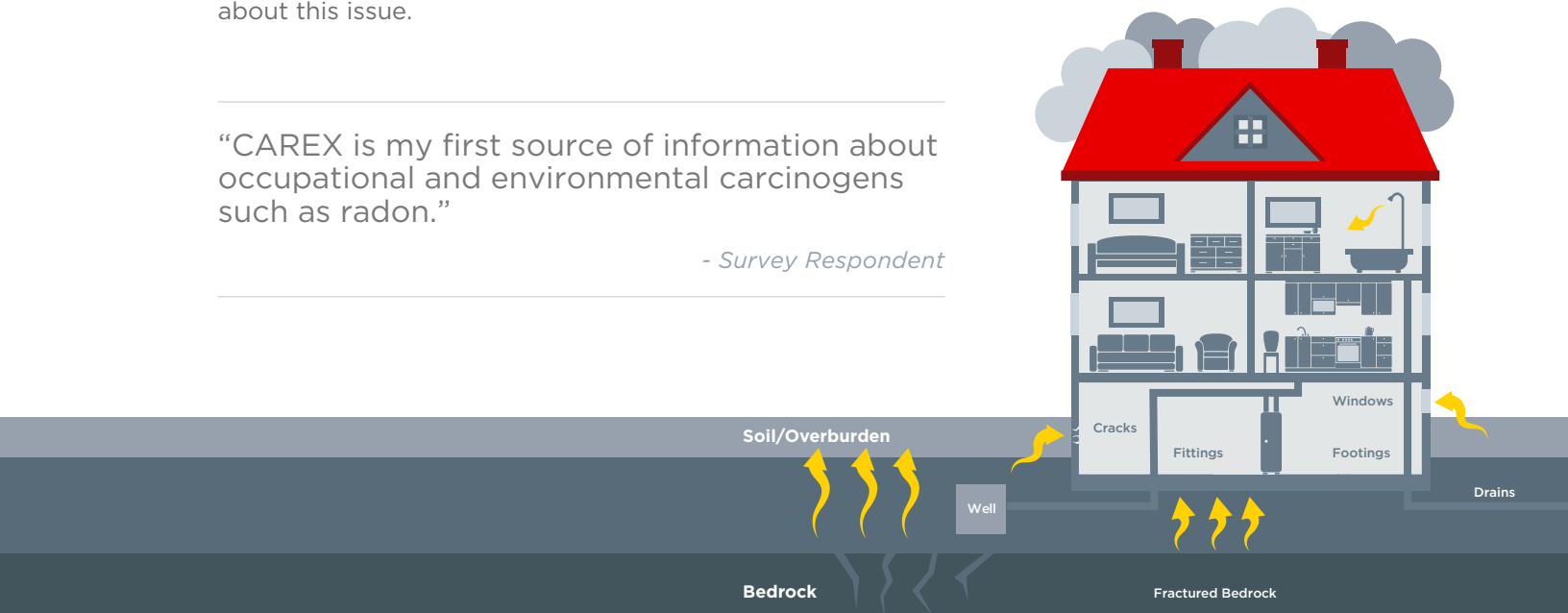
We provided evidence and data visualizations to the **Canadian Environmental Law Association** to support their **Radon Policy Challenge** calling for a coordinated policy response to radon exposure. This challenge is a follow-up to their **Radon in Indoor Air: A review of Policy and Law in Canada** report, which remains a huge asset to the network of groups working to reduce radon exposure across the country.

Radon in schools:

We also continued our work with the **British Columbia Teachers' Federation**, which is advocating with the **BC Confederation of Parent Advisory Councils** for testing in schools to protect teachers and students. As part of this work, we developed a fact sheet outlining how exposure is taking place, what past test results show, and what other provinces are doing about this issue.

“CAREX is my first source of information about occupational and environmental carcinogens such as radon.”

- Survey Respondent

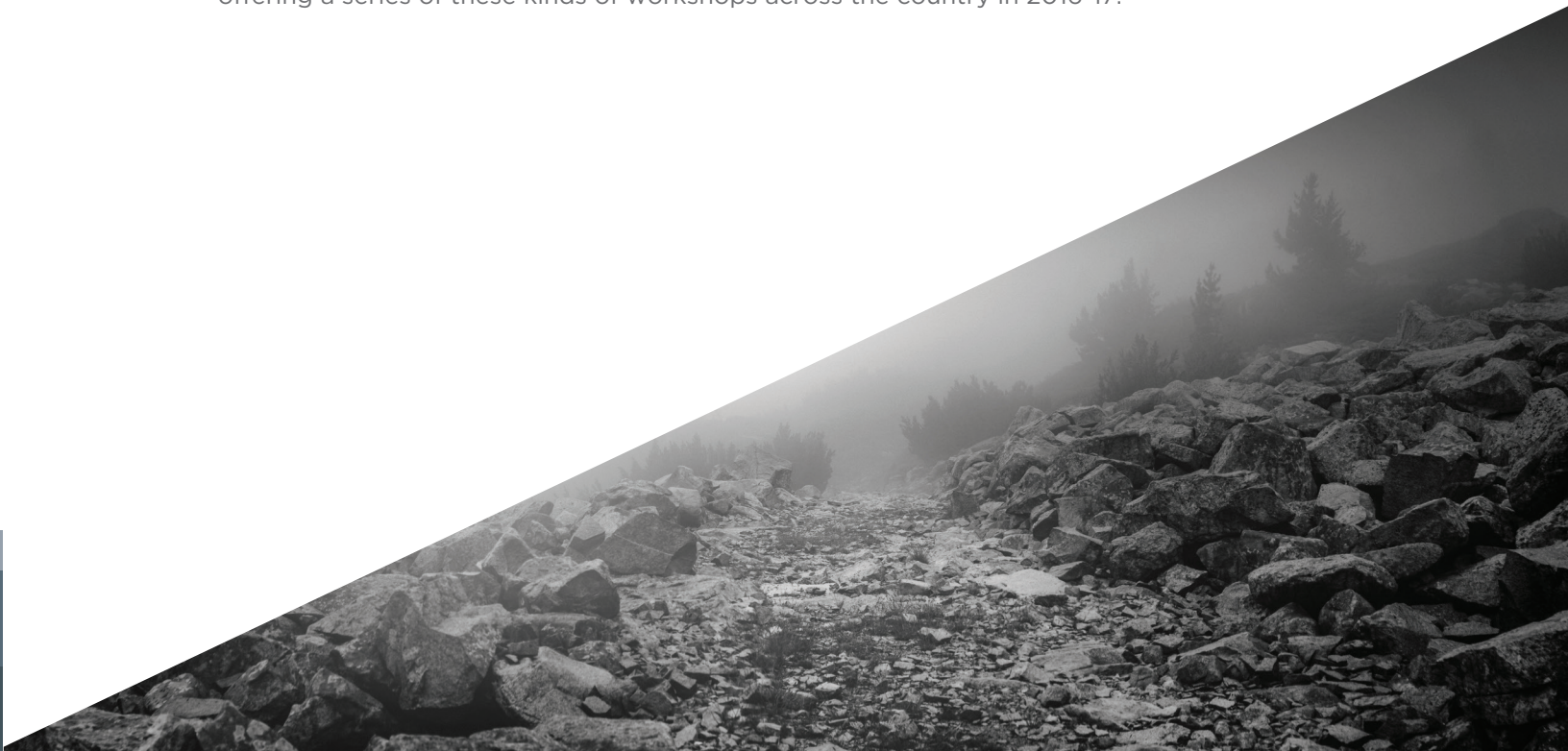


Workplace exposures:

We contributed an article to the **Canadian Centre for Occupational Health and Safety's** newsletter on workplace exposures to radon. In this piece we described the jobs where risk of exposure to radon is highest, which are those that deal specifically with uranium, or that occur underground or in the lower floor of buildings, such as miners, some subway workers, and utilities workers.

Presentations and workshops:

We made presentations at several **Canadian Cancer Society** events including their public forum on radon in the BC town of Prince George. We also helped the **BC Lung Association** coordinate a second radon awareness workshop in Kamloops, BC that facilitated dialogue among a broad group of stakeholders, including public health professionals, radon testers and remediators, real estate agents, firefighters and RCMP, and home inspectors. We're offering a series of these kinds of workshops across the country in 2016-17.



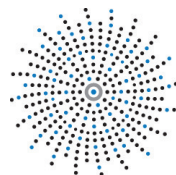
New portal offers resources tailored to First Nations groups

In winter 2016, we wrapped up our Cancer and the Environment Projects, a multi-year knowledge translation and exchange effort with various partners including the **Assembly of Manitoba Chiefs**, **Mississauga First Nation** (Ontario), **Timiskaming First Nation** (Quebec/Ontario), and **Tribal Chiefs Ventures** (Alberta). Guided by self-determination and OCAP (ownership, control, access, and possession) principles, and supported by the **Canadian Institutes of Health Research**, we developed a series of tailored resources to enhance capacity to understand – and address – local concerns about substances known and suspected to cause cancer. These resources are now available via a website portal called “**Environmental Health Resources for First Nations**”. They range from briefing notes on the risks of chlorination by-products and radon gas in homes, to fact sheets about what contaminants may be found in traditional foods such as berries and meat. Through this project work, we also gathered resources developed by other groups on topics such as screening, treatment, traditional food, and tobacco. We are now sharing this portal widely with other communities whose work may benefit from cancer resources that are tailored for First Nations.



“Nobody really wants to talk about cancer. It’s nice to have an organization brave enough to do it. The CAREX project complements our own projects. It helps us inform our community better with regards to carcinogens and inform ourselves on cancer in general.”

– Tara Dantouze, Timiskaming First Nation



PROPEL
CENTRE FOR
POPULATION
HEALTH IMPACT



FNEHIN

FIRST NATIONS ENVIRONMENTAL
HEALTH INNOVATION NETWORK

RÉSEAU D'INNOVATION EN SANTÉ
ENVIRONNEMENTALE DES PREMIÈRES NATIONS

Tailored summaries of CAREX resources now available online

Over the last several years, we've developed a series of tailored summaries for those looking to better understand – and reduce or eliminate – exposures to known or suspected carcinogens. Assembling various CAREX Canada data, tools, and resources, these summaries “package” information by occupation, industry, province, route of exposure, population, and cancer site. Our summaries focused on occupational exposures are now available on our website.

The most recent addition is a summary of the exposures a firefighter might experience on the job, which include asbestos, benzene, diesel engine exhaust, formaldehyde, polycyclic aromatic hydrocarbons (PAHs), and others. We've also developed summaries on occupational exposures in academic settings in partnership with the **Canadian Association of University Teachers (CAUT)**, and with the **Burden of Occupational Cancer Study** on exposures to agents such as asbestos, crystalline silica, diesel engine exhaust, and solar radiation.



To learn more, and to view the other summaries we've developed, visit our [Package Summaries page](#). Have a topic that could be addressed with a package summary? Get in touch with us at info@carexcanada.ca.



“CAREX Canada is a leading resource for CAUT’s academic staff associations and is a valuable source of materials for CAUT’s health and safety publications.”

– Laura Lozanski, Health & Safety Officer, CAUT



Responding to recent research, emerging issues

The **International Agency for Research on Cancer (IARC)** made a series of new carcinogen classifications this year. To address the need for information on these carcinogens, we developed a series of new profiles. These include:

- **1,2-dichloropropane**, a known carcinogen currently used as an industrial chemical;
- **DDT**, a probable carcinogen that has been restricted and banned for decades in Canada;
- **Diazinon**, a probable carcinogen that is being phased out in Canada;
- **Gasoline engine exhaust**, a complex mixture of gases and particulate matter, classified as a possible carcinogen;
- **Glyphosate**, a probable carcinogen and by far the most widely applied pesticide in the country;
- **Malathion**, a probable carcinogen that is used to control fruit fly and adult mosquito populations, for example in West Nile Virus eradication campaigns.



“The new pesticide profiles that CAREX has developed are an asset to public health practitioners. These accessible resources provide practical information that public health professionals can use to better understand potential exposures through occupational and community settings.”

– Lydia Ma, Manager,
National Collaborating Centre for Environmental Health

We also updated our **2,4-D** and **lindane** profiles this year to reflect IARC's recent classification of these pesticides as possible and known carcinogens, respectively. Our team has prioritized **diazinon, glyphosate, malathion**, and **2,4-D** for exposure estimate development. The approach to assessing exposure to these pesticides in workplace and community environments will be unique compared to our other estimates. We are currently conducting data scans and will soon establish advisory committees to move this effort forward.

Given a recent review of the safety of **radiofrequency radiation (RF)** in Canada, we developed a new profile on it this year. RF is classified as a possible carcinogen and is generated by many devices used for communications, medicine, and heating.



To view the new profiles, please
visit our **Profiles & Estimates** page.



WHO designates Collaborating Centre on Occupational and Environmental Health

The **Pan American Health Organization (PAHO)** and **World Health Organization (WHO)** have designated the **Occupational Cancer Research Centre (OCRC)** at **Cancer Care Ontario** as a Collaborating Centre on Occupational and Environmental Cancer based on their work with CAREX Canada. Since 2013, CAREX Canada has been working with the OCRC to help develop regional and national CAREX (CARcinogen EXposure) projects in Latin America and the Caribbean. The designation will see OCRC and CAREX Canada work with PAHO to provide technical advice, develop guidelines and manuals, and offer training and education on developing exposure surveillance projects. The team will also develop models for estimating the burden of occupational cancer applicable to Latin America and the Caribbean and other WHO regions. The anticipated result will be a strengthened capacity to assess exposures in this part of the world, and ultimately to prevent them.



“The Collaborating Centre designation provides a platform to work together across borders. We look forward to seeing these international CAREX projects develop, and to see them applied in preventing exposures and thereby reducing the burden of cancer.”

– Paul Demers, Director of OCRC and Scientific Director of CAREX Canada



For more information about the Collaborating Centre designation, please visit the WHO website.



Occupational
Cancer
Research
Centre



**Pan American
Health
Organization**



Regional Office of the
World Health Organization

Article published on the Emissions Mapping Project

In addition to prevalence estimates for workplace exposure and risk calculations for environmental exposure, CAREX Canada also offers an **Emissions Mapping Project (EMP)**. The EMP is a Google Earth-based tool that visualizes data on emissions to air and their sources, and allows users to see how watersheds, provinces, health regions, eco-zones, and major cities rank according to total toxicity of those emissions. The methods and results of the EMP were recently published in *Environmental Health*. This and other CAREX publications are featured on our **Publications page**.

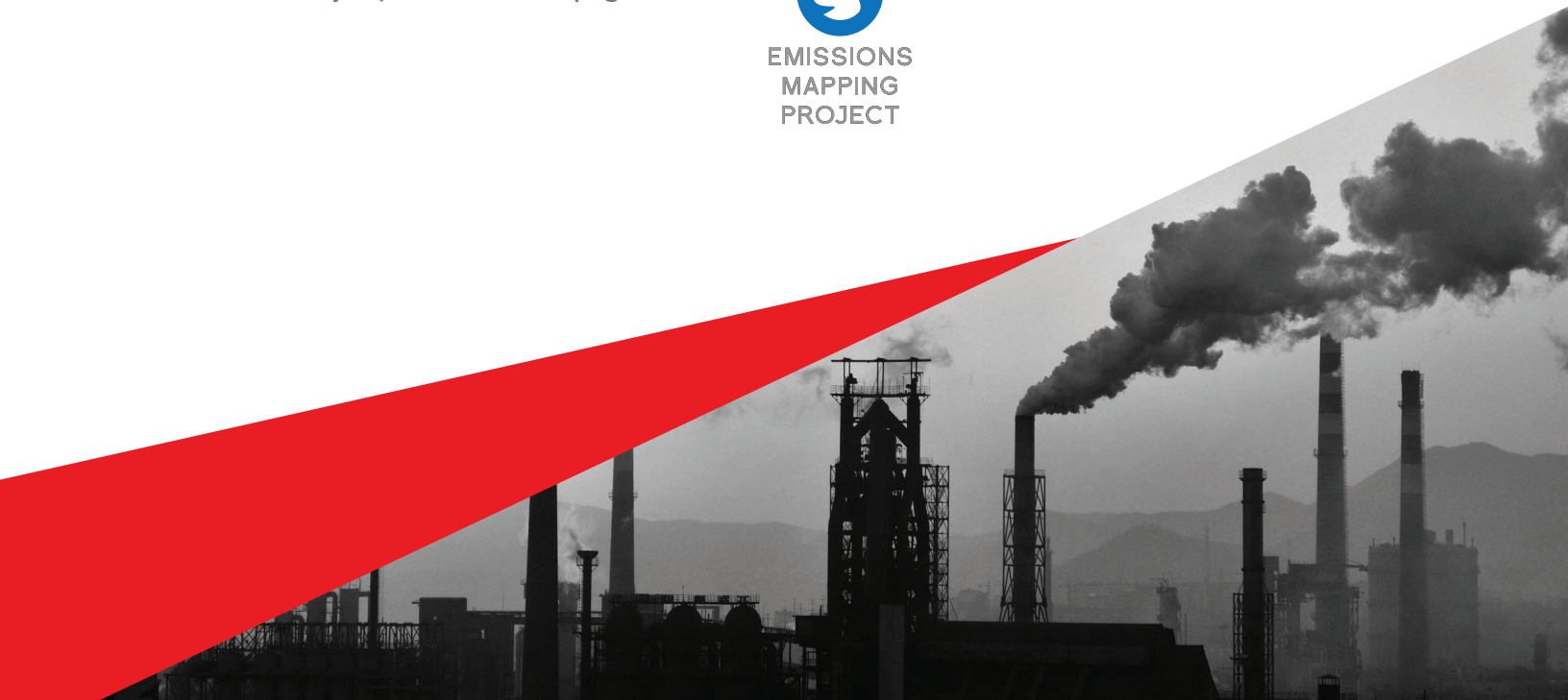
For provinces and territories in Canada, the EMP summarizes the top five substances contributing to total toxic emissions in any region – information that can help to prioritize emission reduction efforts. It also enables comparisons across regions; for example, it shows how residents of Quebec and New Brunswick may be more at risk of exposure to industrial emissions than those in other provinces. The EMP also suggests that residential wood smoke may be an important emission to control, particularly in the north and eastern regions of Canada.



To explore the Emissions Mapping Project, visit our **Tools page**.



EMISSIONS
MAPPING
PROJECT

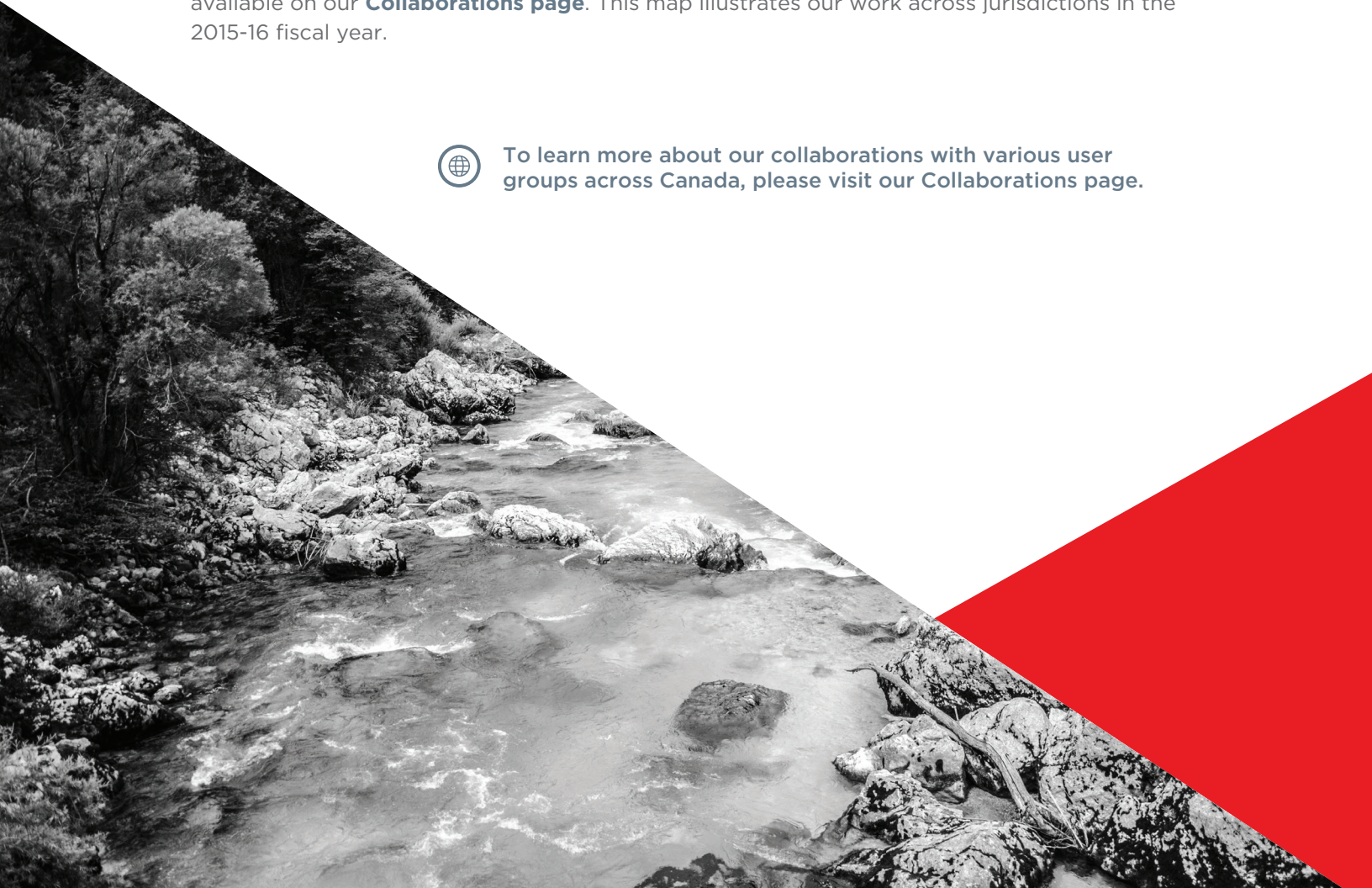


Engagement by jurisdiction

The cornerstone of our knowledge translation efforts is partnerships – we work with various user groups across the country to help reduce exposures to carcinogens at work and in the community. This work sees us collaborating with groups in identifying and addressing the exposures that their populations experience, such as radon in homes, silica on a construction site, or arsenic in community drinking water. To spark further connections and ideas, we've started sharing stories about these collaborations through an interactive online map, available on our **Collaborations page**. This map illustrates our work across jurisdictions in the 2015-16 fiscal year.



To learn more about our collaborations with various user groups across Canada, please visit our **Collaborations page**.





BRITISH COLUMBIA

BC Teachers' Federation
BC Lung Association
BC division of the Canadian
Cancer Society
WorkSafeBC

YUKON

Yukon Chapter of the Canadian
Society of Safety Engineering
Yukon Workers' Compensation
and Safety Board

ALBERTA

Alberta Ministry of Labour
Edmonton Waste Management
Centre of Excellence
Tribal Chiefs Ventures

SASKATCHEWAN

Saskatchewan division of the
Canadian Cancer Society

MANITOBA

Assembly of Manitoba Chiefs
Manitoba division of the
Canadian Cancer Society
SafeWork Manitoba
Workers' Compensation
Board of Manitoba

ONTARIO

Cancer Care Ontario's Aboriginal
Cancer Control Unit
Ontario Office of the
Worker Advisor
Mississauga First Nation

QUEBEC

Quebec division of the
Canadian Cancer Society
Timiskaming First Nation

NOVA SCOTIA

Nova Scotia Department
of Environment
Nova Scotia Department
of Natural Resources

NATIONAL

Blacklock's Reporter
Canadian Cancer Society's
National office
Canadian Centre for Occupational
Health and Safety (CCOHS)
Canadian Childcare Federation
Canadian Environmental
Law Association
Canadian Partnership Against
Cancer's First Nations, Inuit
and Métis Strategy
CBC News
David Suzuki Foundation
Globe and Mail
Occupational Cancer
Research Centre (OCRC)
Sun Safety at Work
Canada (SSAWC)

INTERNATIONAL

Pan American Health
Organization (PAHO)
World Health Organization (WHO)

Acknowledgements

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Photo Acknowledgements

All team portrait photos by Mark Whitehead, with the exception of Paul Demers, Ela Rydz, and Chris Liddy, by Nick Menzies. Other portrait photos provided and owned by the subjects.

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