



The Silica Control Tool™ Pilot Project

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Occupational
Health Clinics
for Ontario
Workers Inc.

Centres de
santé des
travailleurs (ses)
de l'Ontario Inc.



November 18, 2021

The Silica Control Tool™

- An online risk assessment tool created for the British Columbia construction industry
- Creates task-specific respirable crystalline silica (RCS) exposure estimates for *controlled* and *uncontrolled* common construction exposure scenarios
- Based on a linear regression model derived from >4500 personal exposure measurements

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SILICA CONTROL
TOOL

Exposure Control Planning

Jobsite at
Example

November 14th, 2017 to November 8th, 2017

✔ INTRODUCTION

📍 SILICA PROCESS

✔ Get prepared

✔ Jobsite details

● **Work activity**

● Work area & duration

● Silica process summary

🔒 SILICA EXPOSURE (NO CONTROLS)

🔒 EXPOSURE CONTROL

🔒 SILICA EXPOSURE (WITH CONTROLS)

🔒 RESIDUAL EXPOSURE CONTROL

🔒 DOCUMENTATION

🔒 CONCLUSION

Work Activity

The **work activity** is the combination of *material*, *task* and *tool* that will be performed. Basically, (1) the *material* determines how much **crystalline silica** is present and how easily dust can be created when disturbed; and (2) the *task/tool* determines how much energy is exerted into the material. The combination of (1) and (2) determines how much airborne RCS dust is predicted as a result of the nature of the work activity.

Identify the planned work activity to be performed at this jobsite. In some cases, note that the combination of *material* and *task* (without further identifying the *tool*) is enough to make a determination of how much energy is expected to be exerted into the material.

1. Select Material:

Concrete ▼

2. Select Task:

Drilling ▼

3. Select Tool:

Electric Hammer Drill ▼

Can't find your Material, Task or Tool? [Click here.](#)

Back

Continue ▶

Exposure Control Planning

Drilling Concrete with a Hammer Drill

Inside for less than 4 hours

Jobsite at

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✔ INTRODUCTION

✔ SILICA PROCESS

📍 SILICA EXPOSURE (NO CONTROLS)

✔ Get prepared

● Exposure analysis (No Controls)

🔒 EXPOSURE CONTROL

🔒 SILICA EXPOSURE (WITH CONTROLS)

🔒 RESIDUAL EXPOSURE CONTROL

🔒 DOCUMENTATION

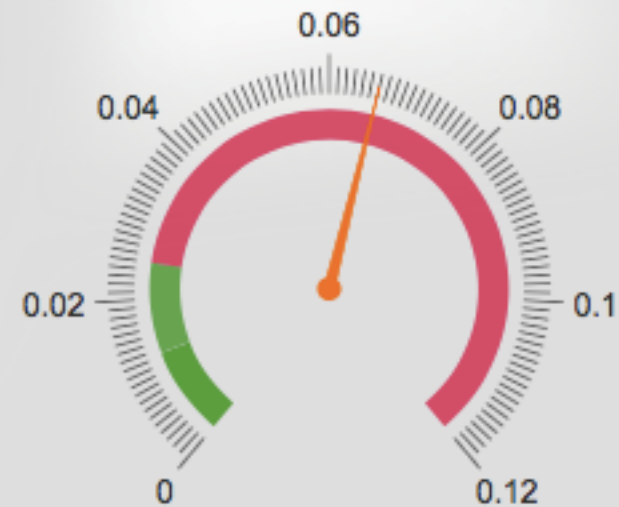
🔒 CONCLUSION

Exposure Analysis (No Controls)

RESULTS

DETAILS

SAVE



EXPOSURE MONITORING DATA EQUIVALENT

Est. Exposure Level (No Controls)	Exposure Limit	Action Level
0.066 mg/m³	0.025 mg/m³ Est. Exposure Level exceeds by 264%	0.0125 mg/m³ Est. Exposure Level exceeds by 528%

Risk Classification

HAZARDOUS LEVEL

We recommend to proceed as HAZARDOUS exposure level or perform an [air sampling test](#).



WARNING

This exposure risk must be controlled:



Exposure Control Planning

Drilling Concrete with a an Electric Hammer Drill

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- ✔ INTRODUCTION
- ✔ SILICA PROCESS
- ✔ SILICA EXPOSURE (NO CONTROLS)

📍 EXPOSURE CONTROL

- ✔ Get prepared
- ✔ Risk elimination & substitution
- **Engineering controls**
- Administrative controls
- Exposure control summary

🔒 SILICA EXPOSURE (WITH CONTROLS)

🔒 RESIDUAL EXPOSURE CONTROL

Engineering Controls

Engineering controls are engineered methods that are built into the design of equipment, process, or plant to minimize a hazardous exposure.

Select the engineering control option you will be implementing for *Drilling concrete using a hammer drill* at this jobsite.

If you're not sure which option to select, click DETAILS for (1) CRITERIA to see what the researchers envision for the control; (2) PROPER PRACTICES to see how the control is expected to be used; and (3) INFORMATION for control guidelines & tips.

- Wetting integrated to tool [Details](#)
- LEV integrated to tool** [Details](#)
- Engineering control not listed [Details](#)
- You have indicated you DO NOT intend to use an engineering control. [Details](#)

📦 **LEV integrated to tool** will be added to your ECP.

We'll now ask questions about the administrative controls you plan to implement.

Exposure Control Planning

Drilling Concrete with a an Electric Hammer Drill

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- ✓ INTRODUCTION
- ✓ SILICA PROCESS
- ✓ SILICA EXPOSURE (NO CONTROLS)
- ✓ EXPOSURE CONTROL

📍 SILICA EXPOSURE (WITH CONTROLS)

- ✓ Get prepared
- Exposure Analysis (With Controls)

🔒 RESIDUAL EXPOSURE CONTROL

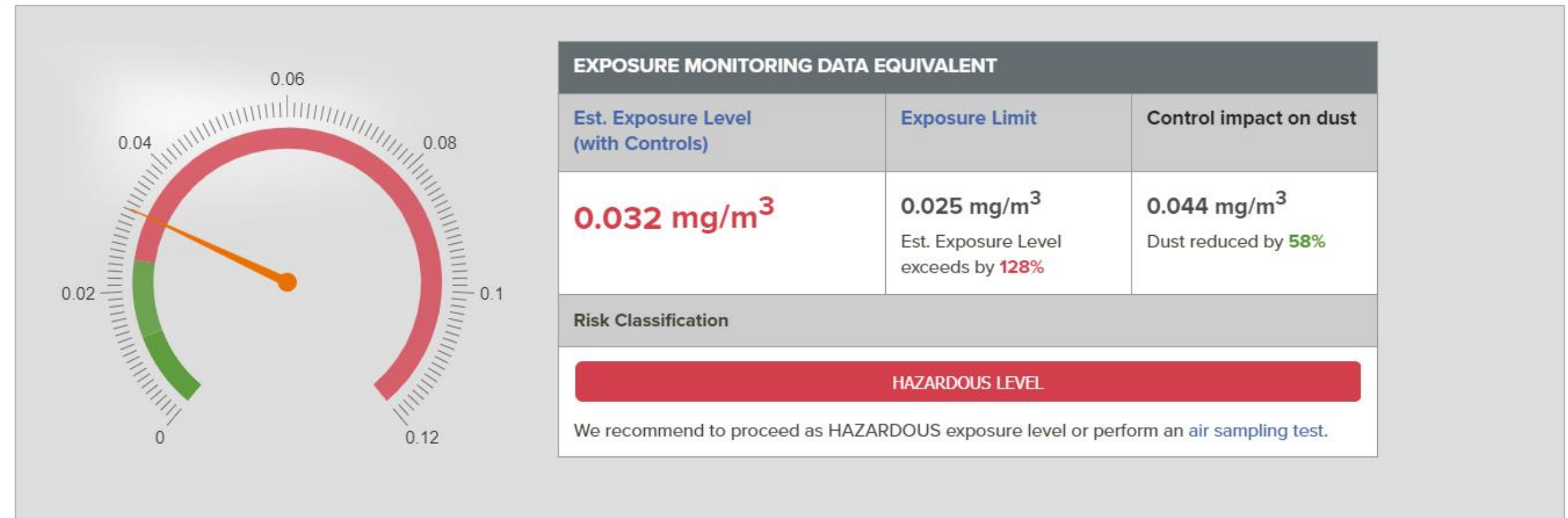
🔒 DOCUMENTATION

🔒 CONCLUSION

Exposure Analysis (with Controls)

RESULTS

DETAILS



WARNING

This exposure risk must be further controlled:

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The Concept

- Help employers access and use existing exposure data
- Educate employers and workers about RCS exposure and control
- Produce effective written exposure control plans
- Reduce effort and cost for employers
- Improve quality of exposure data used in risk assessment



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Silica Control Tool in BC

- Launched May 2017, all BC employers have access
- >3000 registered users as of July 2021
- Risk assessments accepted by WorkSafeBC
- Includes a mechanism for users to report work activities or control that they would like to be added.
- Since launch:
 - >400 measurements added to database
 - 25 new construction tasks added (currently estimates exposure levels for 46 common tasks)



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Benefits of modelled approach

- Can calibrate to other jurisdictions
- Measurements can be pooled and used more than once
- Can compare control effective
- Adaptive to new technologies
- Encourages industry engagement

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SILICA CONTROL TOOL

Ontario's Occupational Disease Action Plan (ODAP)



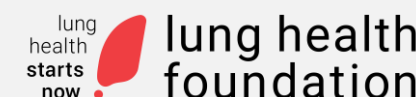
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centre for research in occupational safety and health at Laurentian University



centre de recherche sur la santé et sécurité au travail à l'Université Laurentienne



Occupational Health and Safety System and partners collaboration toward occupational disease prevention

Background



BURDEN OF OCCUPATIONAL DISEASE

WE HAVE LEARNED

- APPROXIMATELY 3,000 CANCERS DIAGNOSED EACH YEAR IN ONTARIO ARE DUE TO OCCUPATIONAL EXPOSURE TO 16 CARCINOGENS COMMONLY FOUND IN THE WORKPLACE
 - SOLAR RADIATION, ASBESTOS, DIESEL ENGINE EXHAUST & **CRYSTALLINE SILICA**

WE HAVE MORE TO LEARN

- OCCUPATIONAL DISEASE FATALITIES HAVE BEEN APPROXIMATELY TWICE THAT OF TRAUMATIC FATALITIES IN EACH OF THE PAST TEN YEARS, *HOWEVER*
- THE NUMBER OF WORK-RELATED ILLNESS CASES AND RELATED FATALITIES IS **MUCH** HIGHER THAN COMPENSATION STATISTICS INDICATE

PRIORITIES OF ODAP

• EXPOSURES:

- NOISE
- ALLERGENS & IRRITANTS (BOTH SKIN & LUNG)
- DIESEL EXHAUST EMISSIONS
- RESPIRATORY HAZARDS
 - ASBESTOS, **CRYSTALLINE SILICA**

• DATA AND EVIDENCE:

- INTELLIGENCE AND DECISION SUPPORT

• SPECIAL FOCUS:

- ELECTRONIC MEDICAL RECORDS

Ontario Prevention Works (5-yr Strat)

Objectives



Objective 1: Build and use the best evidence to target initiatives, measure performance and increase system oversight



Objective 2: Improve OHS knowledge and practices



Objective 3: Support workplace parties to fulfil their OHS roles and responsibilities and achieve excellence



Objective 4: Make OHS easier for small businesses

Areas of Systems Focus

Occupational illnesses
Work-related mental health and workplace violence and harassment

MLTSD: OCCUPATIONAL HEALTH CONSULTATION



- THE MINISTRY OF LABOUR, TRAINING AND SKILLS DEVELOPMENT (MLTSD) IS CONSULTING ON NEW OR REVISED OCCUPATIONAL EXPOSURE LIMITS (OELS) BASED ON THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) RECOMMENDATIONS FOR 2018 AND 2019. THE MLTSD IS ALSO PROPOSING TO:
- ALIGN THE CURRENT OELS FOR SILICA IN REGULATION 833 – CONTROL OF EXPOSURE TO BIOLOGICAL OR CHEMICAL AGENTS (REG. 833) AND O. REG. 490/09 – DESIGNATED SUBSTANCES (O. REG. 490/09) UNDER THE *OCCUPATIONAL HEALTH AND SAFETY ACT* (OHSA) WITH THE LIMITS RECOMMENDED BY THE ACGIH.

CONSTRUCTION CHALLENGES



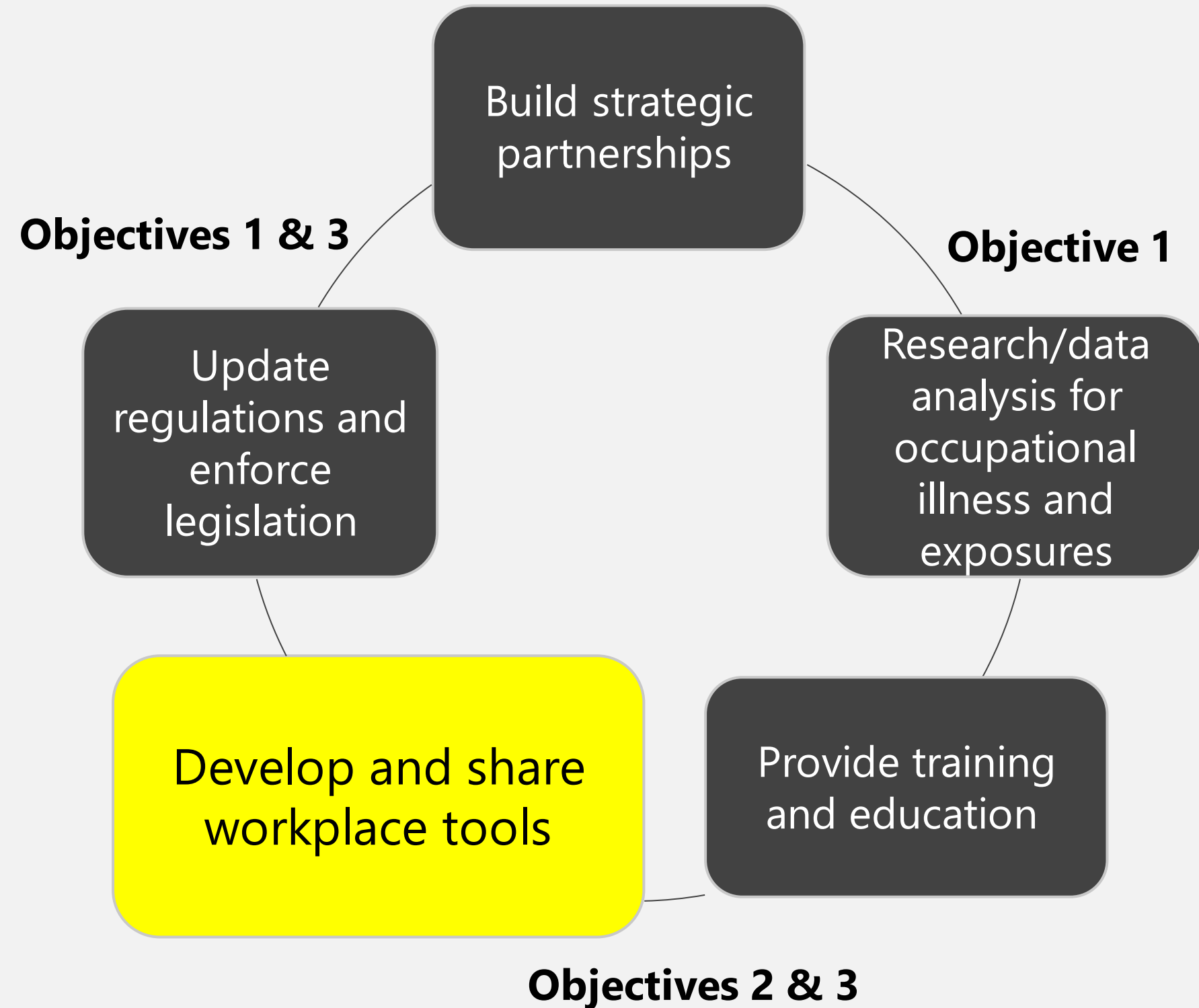
- WORK SITES CHANGE RAPIDLY
- WORKERS AND COMPANIES MOVE BETWEEN SITES
- TASKS VARY WITHIN AND BETWEEN WORK SHIFTS
- LACK OF AVAILABLE IN-HOUSE EXPOSURE MEASUREMENTS AND INDUSTRIAL HYGIENE EXPERTISE

ONTARIO & OCCUPATIONAL ILLNESS PREVENTION

➤ BUILD CAPACITY OF THE OHS SYSTEM AND EXTERNAL PARTNERS TO:

- IMPROVE THE RECOGNITION AND CONTROL OF HAZARDOUS EXPOSURES IN ONTARIO WORKPLACES
- IMPROVE OI RECOGNITION AMONG WORKPLACE PARTIES AND PRIMARY CARE PROVIDERS
- IMPROVE REPORTING OF OI BY WORKPLACE PARTIES AND PRIMARY CARE PROVIDERS

Strategy Objectives 1 - 4



Ontario Pilot-Silica Control Tool



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Welcome to the Ontario Pilot Silica Control Tool™

This project is made possible through funding by



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ONTARIO PILOT SILICA CONTROL TOOL™

Welcome back! Please sign in to your account:

Username:

Password:

[Show Password](#)

[Forgot Password](#)

[→ Sign In](#)

Acknowledgement

By signing in, you certify that you have read and understand the [Terms of Use](#) and [Privacy Policy](#), and agree to be bound by both.

Silica Control Tool Pilot

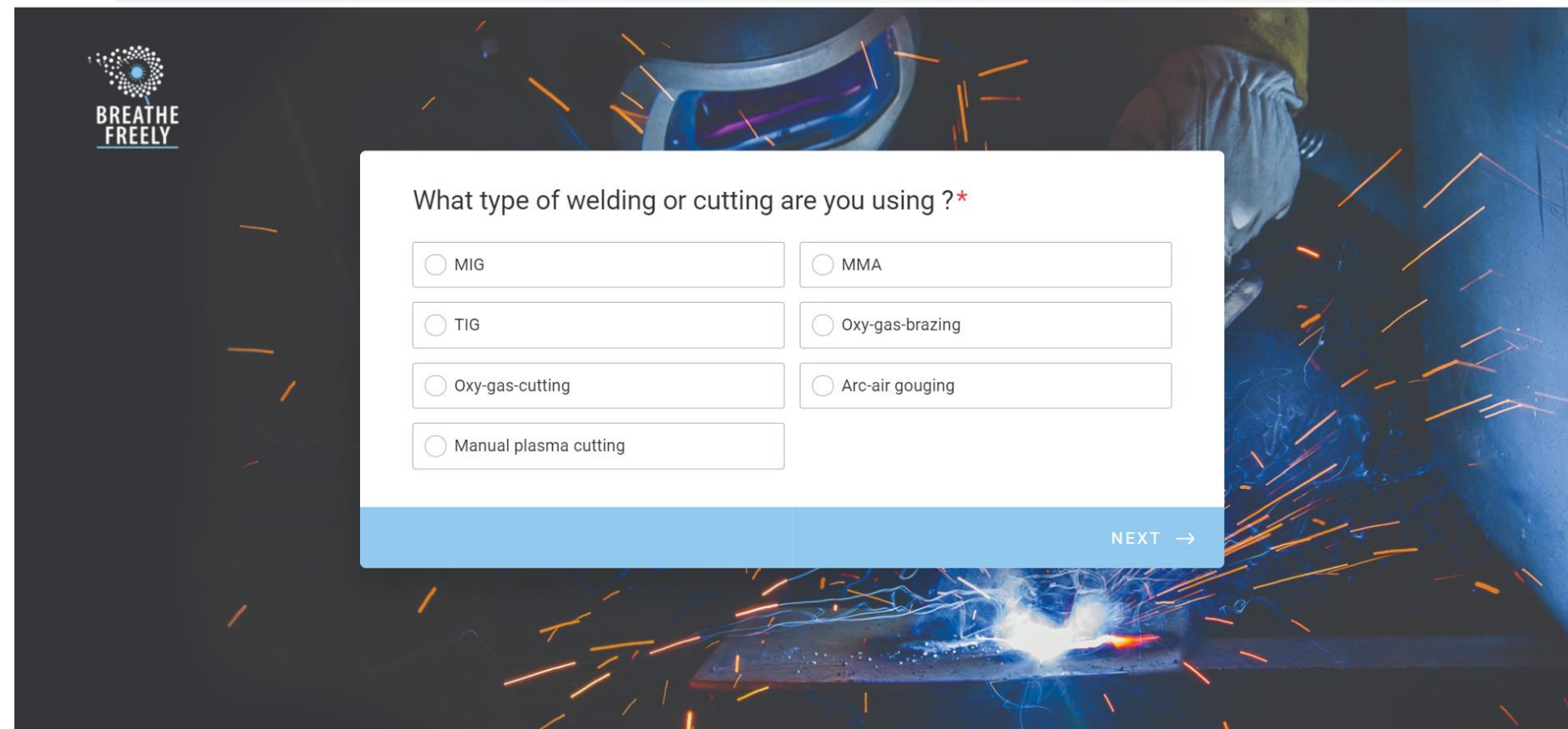


- SMALL-20
 - MEDIUM-20
 - LARGE -20
- 1 YEAR ACCESS
- PLEASE APPLY ! [HERE \(OHCOW WEBSITE\)](#)
 - WE NEED PARTICIPANTS AND YOUR FEEDBACK

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Potential for further development

- Silica Control Tool applicable in other jurisdiction
- Concept could be applied to other hazards:
 - e.g. Asbestos, lead, welding fume



The screenshot shows a digital interface for a survey. At the top left is the 'BREATHE FREELY' logo. The main question is 'What type of welding or cutting are you using ?*'. Below the question are seven radio button options: MIG, MMA, TIG, Oxy-gas-brazing, Oxy-gas-cutting, Arc-air gouging, and Manual plasma cutting. A blue 'NEXT →' button is located at the bottom right of the form. The background of the interface is a dark image of a welder in a protective mask with bright sparks flying from the welding point.

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Currently in Development

- Asbestos Control Tool
- Alberta version of Silica Control Tool for Alberta Roadbuilders and Heavy Construction Association
- Mining specific version with BC Ministry of Energy, Mines and Low Carbon Innovation
- Ontario Silica Control Tool Pilot Project

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THANK YOU



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