

Your Health & Ontario's Focus on Occupational Disease Prevention

Data, Tools & Resources to Address Risks

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Refresher: Prevention Works-Ontario's 5-Yr Prevention Strategy

3 Areas of systems focus:

- Occupational Illnesses
- Work-related mental health and workplace violence and harassment
- Small Business

The Occupational Disease Action Plan (ODAP)

- Active from 2017 – 2020 with numerous accomplishments
- Activities were recognized by the Auditor General

Occupational Illness Prevention Steering Committee (OIPSC)

- Alignment with Prevention Works and other recommendations by the AG
- Goal of **collective impact** with evidence-based performance measures
- Mandate:
 - Improve the recognition and control of priority **exposures**, and
 - Improve recognition and reporting of **occupational illnesses**



- to reduce the burden of occupational illness in Ontario, per the Occupational Illness Area of Systems Focus of the Prevention Works strategy

Occupational Illness Prevention Steering Committee



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



Why Occupational Illness?

COST

- person and family
- direct and indirect
- non-compensation,
- under reporting and under recognized
- WSIB vs OHIP

PREVENTABLE

- **Controlling Exposures**
- **Addressing Problem of under-recognition and under-reporting**

Past Successes: ODAP & OIPSC

- Noise campaign
- Irritants and Allergens (Skin and Lung)
- Data & Intelligence
- Electronic Medical Records
- Diesel Exhaust Particulates
- Respiratory Hazards Working Group (System Resources Inventory & MLTISD Initiatives)
- Engineered Nanomaterials
- OCRC [Occ Disease Surveillance System](#) & [ODStats](#) WEBSITE
- Selected from a list of over 25 different subject areas, including emerging issues
- www.preventoccdisease.ca & Physician/Clinician's Toolkit
- [OHCOW Apps, Tools & Calculators](#)



OIPSC Accomplishments

Risk Based, Evidence Driven

Priority Hazard Setting, Logic Model

- Silica, asbestos and DEE *Welding Fumes was also included due to stakeholder feedback
- Allergies and irritants (potential focus on those with both lung and skin health impacts)
- Heat stress and UV/solar radiation exposure
- Noise

Occupational Disease Landscape in Ontario

- MAP Centre for Urban Health Solutions. Dr. Linn Holness and Janet Brown
- What is currently taking place with education and outreach
- Exposure and Surveillance: Data collection on workplace exposure
 - OCRC OD Surveillance Advisory Committee
 - Health Canada/OCRC Cancer in Firefighters Workshop
 - Led pan Canadian workshop. Dr. Paul Demers
 - What, how, who, will collect, collate exposure data and share with others



OIPSC Accomplishments

Risk Based, Evidence Driven

Silica Control Tool- Construction **Now** Coming to Ontario!

- OHCOW in partnership with IHSA, BCCSA, CCOHS (building from Pilot)
- Cohesive Campaign MLTISD, WSIB, HSAs, U of T, CRE-OD
- Exploration into adaptation to other industries/exposures
 - Mining, Industrial, Welding Fumes, Asbestos
- [Occ-tober Event-Worker Focussed Science & Prevention](#)
 - Archived Webinars available On-Demand
- <https://www.ohcow.on.ca/occupational-illness/>

Respirable Crystalline Silica and Diesel Engine Exhaust Exposure Levels in Ontario Mines

University of British Columbia
Melanie Gorman Ng

OHCOW
Kimberly O'Connell, Kevin Hedges

University of Toronto
Victoria Arrandale, Ali Shakeel

Background on Exposure Data

- Silica → Silicosis, lung cancer, COPD, kidney disease, connective tissue disease
- Understanding health effects requires an understanding exposure
 - Health data is held by Ministry of Health
 - Exposure data is now held by companies
- Exposure data sharing is challenging
- Occupational Cancer Research Centre previously constructed a mining exposure data base using historical data shared by the MLITSD
 - OMED data ends in the 1990s, not relevant for many current workers
- FOI request to obtain database of occupational hygiene monitoring data from Ontario mines

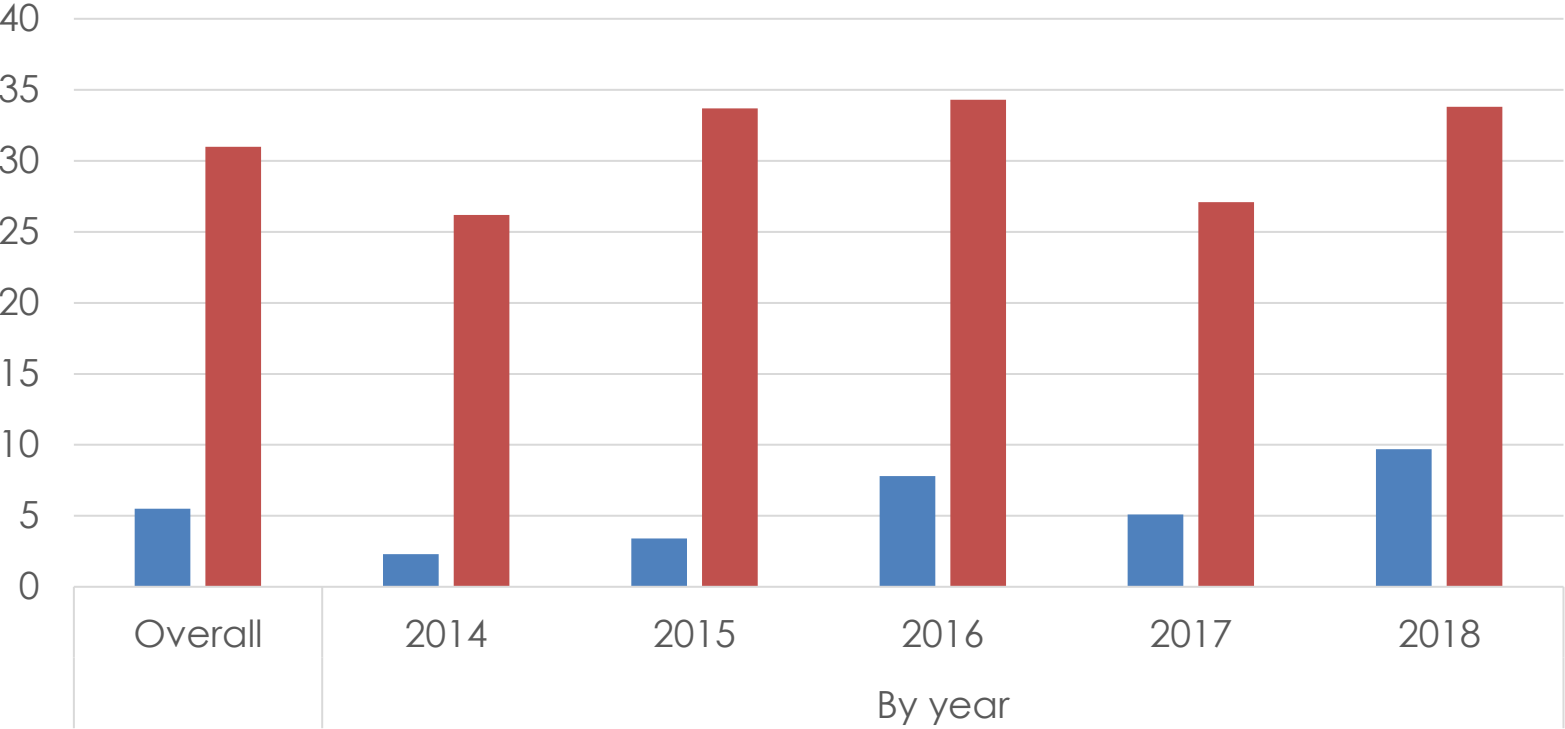
Exposure Measurements

- Collected from 2013 to 2018
- 14 companies, 12 hazards, 16,829 observations
- Sampling details (method, duration, personal vs. area, job type, comments etc.)
- Focused on mass and concentration

Elemental carbon	902 samples analyzed
Respirable crystalline silica	1332 samples analyzed

Percent above OELs

Respirable Crystalline Silica



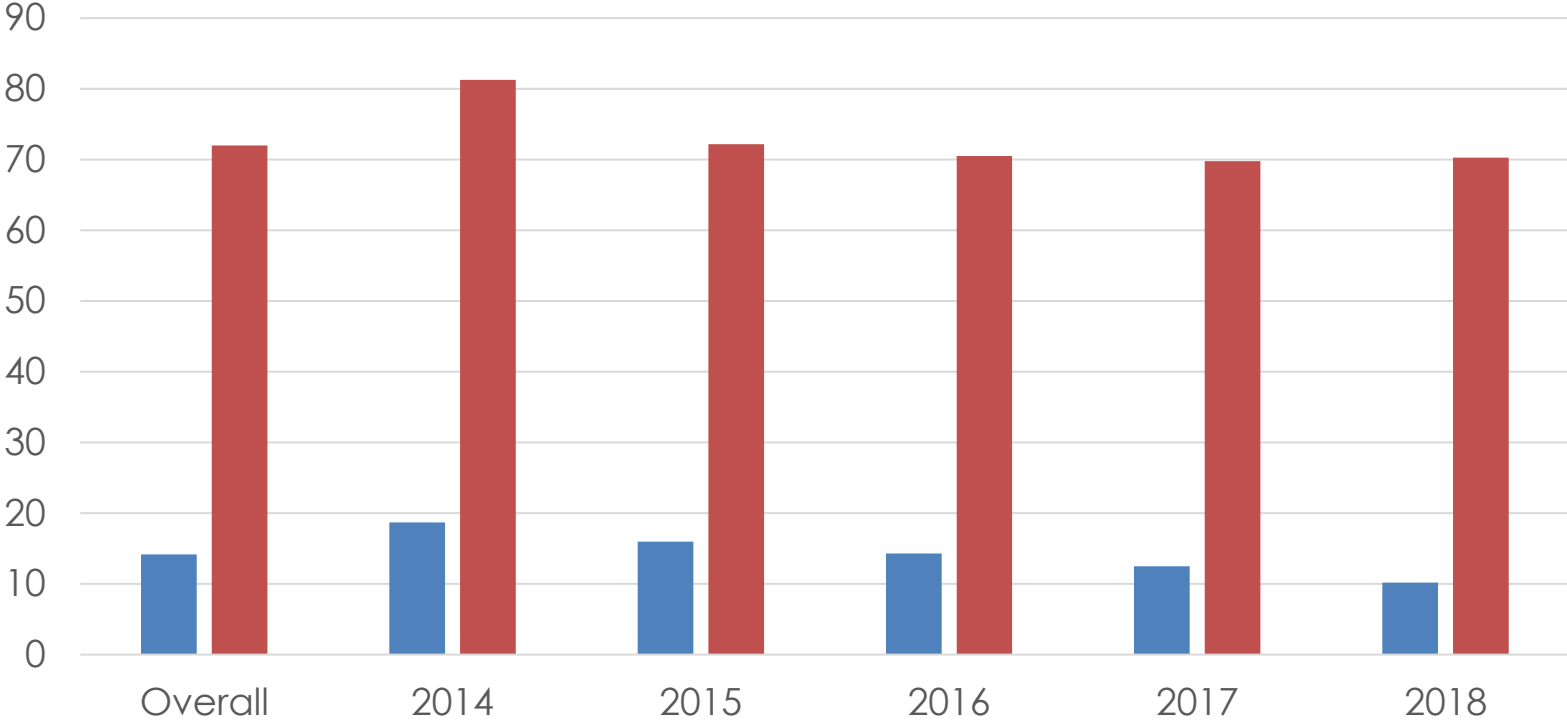
Blue > current ON limit

Red > recommended limit

■ >0.1 ■ >0.025
mg/m³

Percent above OELs

Elemental Carbon



Blue > NEW ON limit

Red > recommended limit

■ >0.12 ■ >0.02
mg/m³

Time Trends

- Exposures continue to decrease over time
- Elemental carbon (diesel) decreasing faster
- There were differences between mines, opportunity for information sharing

Exposure	Annual Change
RCS	-1.8%
EC	-10.7%

Main Messages

- Encouraging trend of annual reductions for elemental carbon, continued decrease for silica
- Majority of 2013-2017 measurements were compliant with current/proposed limits
- But 31% of RCS measurements and 72% of EC measurements above health-based levels
 - Information on respirator use and other controls not available
 - There is likely increased risk of disease at these exposure levels
 - Continued need to reduce exposure levels
- Exposure surveillance would be beneficial

Worksites and Occupational Illness: 2022-2023 Projects



Dr. Sandra Dorman, PhD
Centre for Research in Occupational Safety and Health

Diesel Particulate Exposure Reduction

Summary

Ontario mine workers have some of the highest exposures to Diesel Particulate Matter.



Diesel Particulate is a known A1 Human Carcinogen.



CROSH is evaluating an educational intervention to enact change.



10:25am in Georgian C on Thursday, April 20, 2023



George Flagler, ECE, BPHE

“The United Steelworkers
Diesel Particulate Project”



Heat Illness Prevention

Summary

Heat strain risk is increasing



Despite equivalent work conditions, different workers respond differently



CROSH is developing a monitoring program to incorporate into current hot workplan practices



Implications



Current ACGIH standards cannot protect workers because:

- Some work cannot have time limits;
- Some work conditions fluctuate rapidly;
- Different workers respond differently to the same conditions;
- The same worker can respond differently, on different days, to the same conditions;
- Climate change is impacting more workplaces & workers; who currently don't enforce guidelines or who create their own.



Why Monitor ?

Meaningful heat stress protection is:

- Preventative;
- Rapid / real-time;
- Does not rely on secondary monitoring systems (e.g. check-in).



Future Directions

Implement and evaluate the Monitoring plan in an organization.

Implement and evaluate the Heat Strain Monitoring plan in an organization.

Resources

Research at CROSH:

FITNESS IN MINE RESCUE

WHAT ARE THE PHYSICAL DEMANDS OF MINE RESCUE?

76 mine rescuers wore personal monitors during the Mine Rescue Event at the 2016 International Mine Rescue Competition. The simulated emergency included fighting fire and rescuing miners in an underground mine.

PHYSICAL MEASURES:

- Heart Rate
- Breathing Rate
- Energy Expenditure
- Oxygen Consumption
- Skin Temperature
- Core Temperature

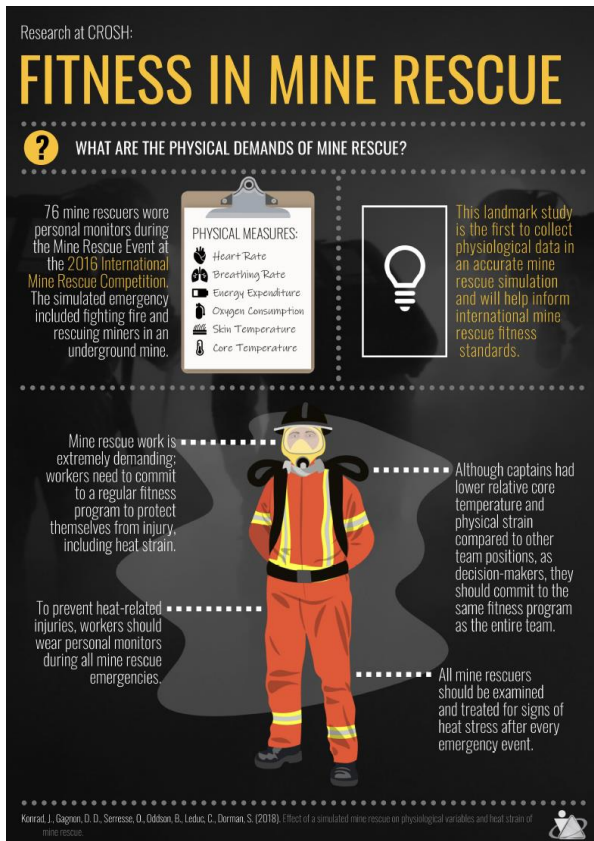
This landmark study is the first to collect physiological data in an accurate mine rescue simulation and will help inform international mine rescue fitness standards.

Mine rescue work is extremely demanding; workers need to commit to a regular fitness program to protect themselves from injury, including heat strain.

To prevent heat-related injuries, workers should wear personal monitors during all mine rescue emergencies.

Although captains had lower relative core temperature and physical strain compared to other team positions, as decision-makers, they should commit to the same fitness program as the entire team.

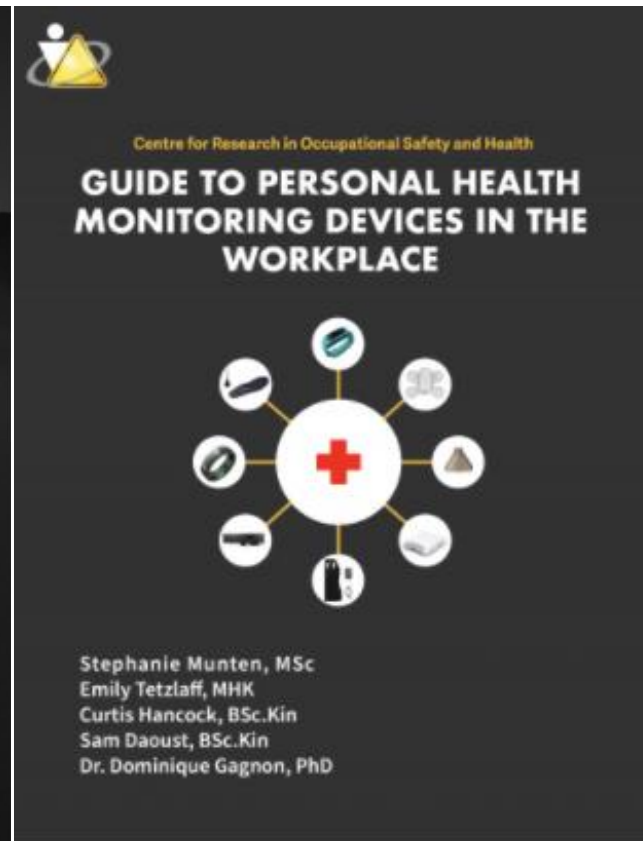
All mine rescuers should be examined and treated for signs of heat stress after every emergency event.



Konrad, J., Gagnon, D. D., Serresse, O., Oddson, B., Leduc, C., Dorman, S. (2018). Effect of a simulated mine rescue on physiological variables and heat strain of mine rescuers.

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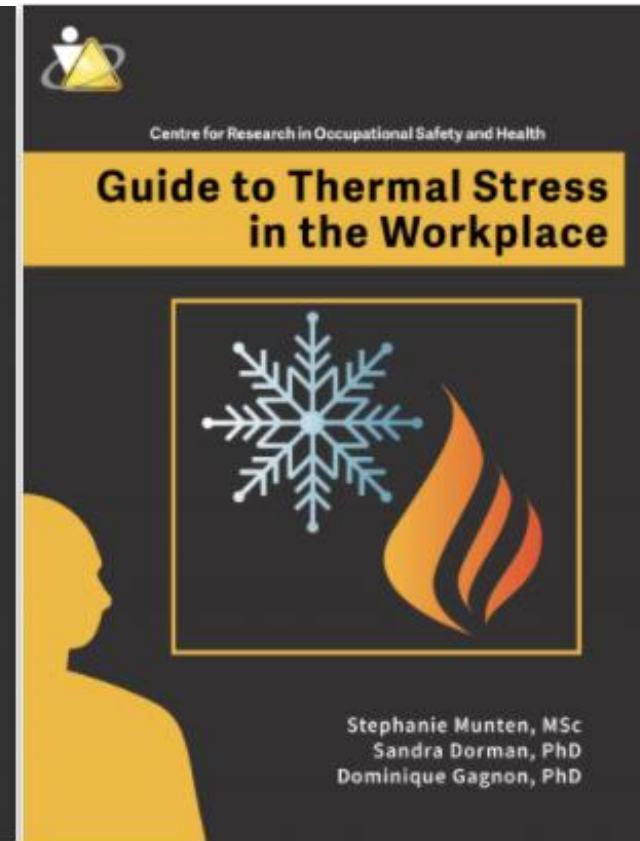
GUIDE TO PERSONAL HEALTH MONITORING DEVICES IN THE WORKPLACE



Stephanie Munten, MSc
Emily Tetzlaff, MHK
Curtis Hancock, BSc.Kin
Sam Daoust, BSc.Kin
Dr. Dominique Gagnon, PhD

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Guide to Thermal Stress in the Workplace



Stephanie Munten, MSc
Sandra Dorman, PhD
Dominique Gagnon, PhD

Centre for Research in Occupational Safety and Health (CROSH)

TEMPERATURE & DECISION MAKING

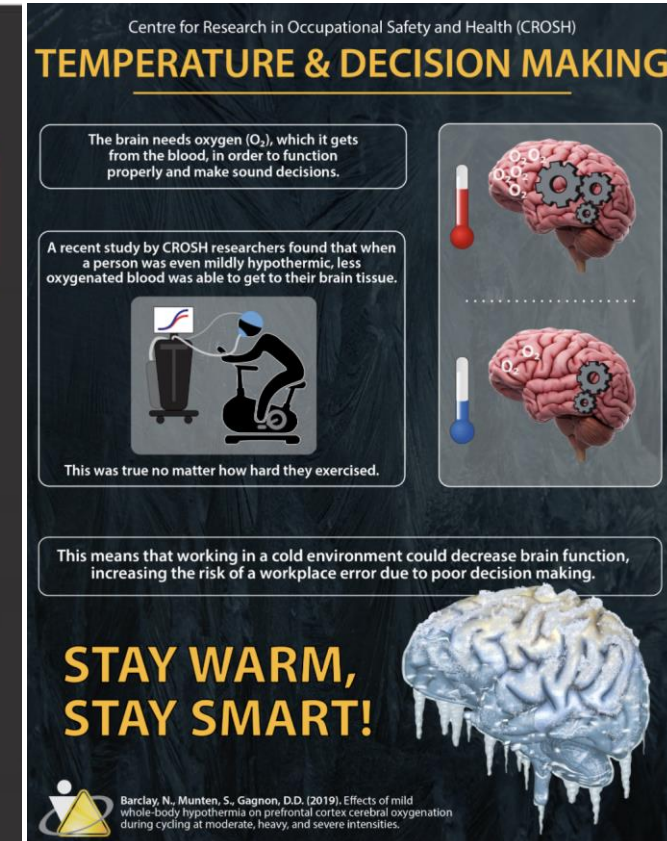
The brain needs oxygen (O₂), which it gets from the blood, in order to function properly and make sound decisions.

A recent study by CROSH researchers found that when a person was even mildly hypothermic, less oxygenated blood was able to get to their brain tissue.

This was true no matter how hard they exercised.

This means that working in a cold environment could decrease brain function, increasing the risk of a workplace error due to poor decision making.

STAY WARM, STAY SMART!



Barclay, N., Munten, S., Gagnon, D.D. (2019). Effects of mild whole-body hypothermia on prefrontal cortex cerebral oxygenation during cycling at moderate, heavy, and severe intensities.

Konrad, Justin MHK; Gagnon, Dominique PhD; Serresse, Olivier PhD; Oddson, Bruce PhD; Leduc, Caleb MHK; Dorman, Sandra C. PhD Effect of a Simulated Mine Rescue on Physiological Variables and Heat Strain of Mine Rescue Workers, Journal of Occupational and Environmental Medicine: March 2019 - Volume 61 - Issue 3 - p 251-261 doi: 10.1097/JOM.0000000000001530

Vibration Mitigation/ MSK Prevention

Whole-body vibration: Health effects & evaluation in the workplace (WBV101)

CROSH Course: September 18th - 22nd, 2023

Developed and Instructed by

Dr. Katie Goggins, PhD, CCPE

- Physics of Vibration
- Human Response to Whole-Body Vibration (WBV)
- Examples of WBV Exposure
- WBV Standards
- Assessment of WBV Risk
- WBV Data Analysis
- Technical Reporting Requirements
- Strategies of Controlling WBV





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In Closing...

We Need YOU!
Comments/Questions?



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for Ontario
Workers Inc.

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

Dalla Lana
School of Public Health



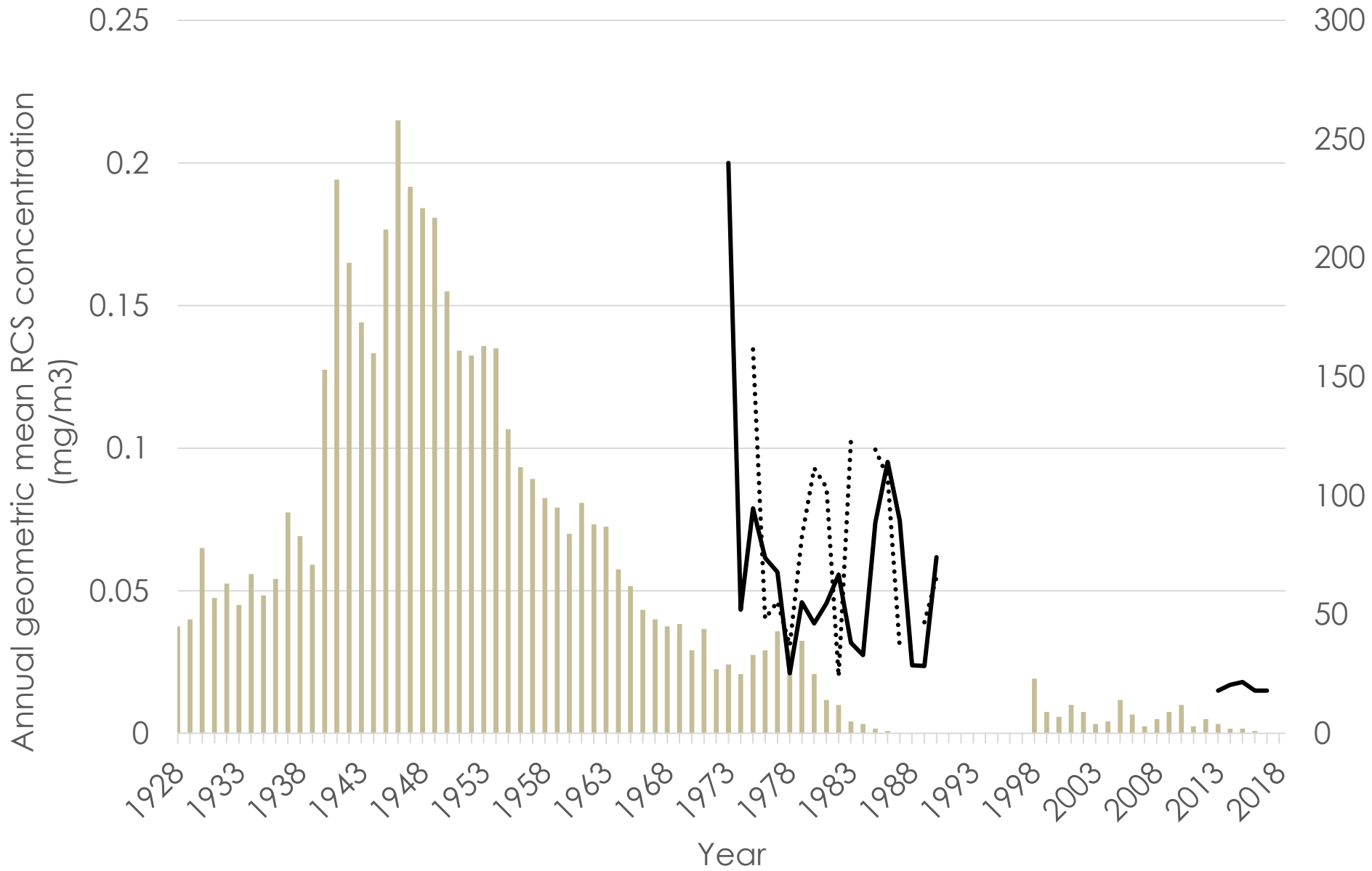
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Extra Slides





Silicosis Cases
 Underground RCS (mg/m³)
 Surface RCS (mg/m³)