



Mining webinar: How to prepare for Ontario workplace inspections on airborne hazards

Mining Sector Compliance Campaign 2024-2025

June 27, 2024

Welcome!

- Thank you for joining us! The webinar starts at 10:30 am ET.
- Please use Q&A at the bottom of your screen for speaker questions and we will answer them at the end of the webinar.
- Please use chatbox for commentary or technical questions.
- A link to the webinar recording, a copy of the presentation slides, and reference material will be emailed to all registrants within a few days.



Please complete voluntary MLITSD pre-webinar survey. Responses are anonymous.

Webinar hosts

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Ministry of Labour, Immigration, Training and Skills Development

FAIR, SAFE AND HEALTHY WORKPLACES DIVISION



Our Vision

We envision an Ontario that is the most attractive place to work in the world because every employee is treated fairly and comes home safely.

Our Mission

We set, communicate and enforce legislation to help make Ontario workplaces fair, safe and healthy. Through our professionalism, innovation and collaboration, we earn and maintain the public trust.

Ministry of Labour, Immigration, Training and Skills Development

Disclaimer

- This presentation is intended to assist the workplace parties in understanding their obligations under the Occupational Health and Safety Act (OHSA) and its regulations. It is not intended to replace the OHSA or the regulations, and reference should always be made to the official versions of the legislation.
- This presentation does not constitute legal advice. It is the responsibility of the workplace parties to ensure compliance with the law. Anyone requiring assistance with respect to the interpretation of the legislation and its potential application in specific circumstances should contact their legal counsel.
- Ministry of Labour, Immigration, Training and Skills Development (MLITSD) inspectors will apply and enforce the OHSA and its regulations based on the facts as they may find them in the workplace. This presentation does not affect their enforcement discretion in any way.

2024-2025 MHSP Campaign: Airborne Hazard Management Program

Compliance Assistance: April 1, 2024 – March 31, 2025

The MLITSD is working with Workplace Safety North (WSN) and the Infrastructure Health & Safety Association (IHSA) to provide information and education to workplace parties to improve their understanding of the requirements for managing airborne hazards.

Focused Inspections: June 1, 2024 – March 31, 2025

2024-2025 MHSP Campaign:

Rationale for the Campaign

- 87% of all fatalities within the Ontario mining sector are caused by occupational diseases.
- The Mining Health, Safety, and Prevention Review, completed in 2015, identified occupational disease, particularly those related to airborne hazards, as one of the five key issues that posed the greatest risk to worker health and safety.
- There are substantial new regulatory changes to Regulation 854 which came into effect on September 1, 2023, including airborne hazard management in all mines and mining plants (Section 182).

2024-2025 MHSP Campaign:

This campaign aims to:

- Increase awareness of recognizing, assessing, and controlling airborne hazards and their associated risks to health.
- Increase awareness and compliance with OHSA and its regulations, particularly with amendments to Regulation 854 that came into effect in 2023.
- Increase awareness of available resources, including specific guidelines for the mining sector.

Overview of Amendments

- On April 11, 2023, the Minister announced the amendments to Regulation 854 (Mines and Mining Plants).
- Amending regulation [O. Reg. 69/23](#) is posted on e-Laws and the amendments have been incorporated into [Regulation 854](#). Additional information can be found on the [Regulatory Registry](#).



July 1, 2023

September 1, 2023

- Updates to standards (s. 1, 1.1, 30, 71, 119.1, 195, 228, and 251)
- Changes to ground control sections (s. 6 and 72)
- Ladderways on surface (s.48)
- New section for IPCs (s. 51.1) and other hoisting updates (s. 226, 232, and 248)
- Vehicles on rails (s. 103.1 and 103.2)
- Modular training updates (s. 11.2.3 and 11.3)
- Battery charging stations (s. 261)
- Management of change (s. 5)
- Supervisor duties (s. 63 and 64)
- Seismic Risk Management (s. 71.1)
- Explosives (s. 121, 123, 124, 125 and 129)
- **Airborne Hazard Management (s. 182)**
- **Diesel-Powered Equipment, Air Flow and Elemental Carbon OEL (s. 183-183.4)**
- Ventilation & Heat/Cold Stress (s. 252-255, 286)
- Reagents, Eyewash, Antidotes (s. 268-270, 282)

Airborne hazard management program

Section 182

Employers at mines and mining plants must develop and maintain an airborne hazard management program.

The program shall:

- Set out measures to eliminate or control airborne hazards identified as part of the workplace risk assessment and address issues including testing, monitoring or sampling.
- Be developed in consultation with the joint health and safety committee (JHSC) or health and safety representative (HSR), if any.
- Be reviewed periodically (at least annually) to ensure its effectiveness.
- Provide workers with information and instruction appropriate to their role.



Airborne hazard management program

Section 182

Specifically, an airborne hazard management program must include the following elements:

- Measures and procedures required to effectively eliminate or control airborne hazards and potential airborne hazards.
- Identified persons responsible for implementing the program.
- Identified training required for the responsible persons.
- Sampling and testing frequencies, locations, strategies and methodologies for assessing worker exposure and identifying air contaminant sources.
- Measures and procedures to maintain, monitor and measure the effectiveness and performance of control systems.

Airborne hazard management program

Section 182

- An employer should consider the hierarchy of controls (HOC) to protect workers from exposure. When controlling airborne hazards, it can be useful to apply the source, pathway, and receptor model.
- Sampling programs should be developed and implemented in consultation with an industrial hygiene professional (Certified Industrial Hygienist or Registered Occupational Hygienist) and must include the JHSC or HSR, if any.
- Contractors at a mine or mining plant can either develop their own AHMP to protect their workers or they may work with the employer of the mine or mining plant to use some or all the operation's existing program. If the contractor's program is different, then it should be reviewed prior to beginning work.

The MLITSD Occupational Hygienists are supporting mining inspectors on this campaign.



The Occupational Hygienists are part of the MLITSD Specialized Professional Services Unit. This is what we do:

- Inspect workplaces
- Investigate incidents and occupational illnesses
- Conduct air sampling in workplaces
- Provide technical support for other inspectors
- Focus on chemical, biological and physical agents
- Follow the MLITSD annual [health and safety inspection compliance plan](#)

MLITSD Occupational Hygienists

Focus on these regulations:

- [O. Reg. 833 - Control of Exposure to Biological or Chemical Agents](#)
- [O. Reg. 860 - Workplace Hazardous Materials Information System \(WHMIS\)](#)
- [O. Reg. 381/15 - Noise](#)
- [O. Reg. 632/05 - Confined Spaces](#)
- [O. Reg. 278/05: Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations](#)
- [O. Reg. 490/09 - Designated Substances](#)
- [O. Reg. 861: X-Ray Safety](#)
- Sections of the industrial, mining and construction regulations that deal with occupational hygiene issues.

Compliance Considerations

What AHMP elements may occupational hygienists look at during inspections?

List of airborne hazards and potential hazards

Air contaminants as identified in the risk assessment.

Sources and potential sources of air contaminants, such as:

- Ore and host rock
- Blasting
- Mining, ore processing and transport equipment
- Fuels, resins, shotcrete
- Vehicles, generators
- Maintenance, repair work
- Refining processes, lab work
- Chemical products, labels, safety data sheets (SDS)
- Building materials



Compliance Considerations

Occupational hygienists may:

- Look at air sampling equipment, calibration gas and methods and calibration records.
- Use direct reading instruments to measure airborne concentrations of air contaminants.
- Plan to complete occupational hygiene sampling at a later date.
- Issue a requirement for the employer to complete occupational hygiene air sampling.



Compliance Considerations

What AHMP elements may occupational hygienists look at during inspections?

Airborne hazard testing and monitoring

- Who is responsible, what training do they have?
- Is the sampling strategy based on occupational hygiene science?
- Were NIOSH or other standard methods followed?
- Is sampling equipment operated and maintained according to manufacturer's instructions?
- Are the number of samples, sampling locations and frequency laid out?
- Are results and reports available?
- What is the daily or weekly work schedule?
- What was a worker's exposure and how was it determined?
- Are workers exposed above the Ontario Occupational Exposure Limits (OELs)?

Compliance Considerations

The Ontario exposure limits (OEL) are time weighted average (TWA) limits for daily or weekly exposure.

Full shift sampling is the best way to evaluate worker exposure.

Formula to calculate daily or weekly TWA exposure are given in Regulation 833:

$$\text{Daily TWA Exposure} = \frac{C_1T_1 + C_2T_2 + \dots C_nT_n}{8}$$

$$\text{Weekly TWA Exposure} = \frac{C_1T_1 + C_2T_2 + \dots C_nT_n}{40}$$

Where: C is the measured concentration, and T is the time the worker is taken to be exposed to that concentration

These formulae work for any daily shift length or any weekly work schedule. But there are methods to adjust the OEL for shifts longer than 8 hours per day or 40 hours per week. The Quebec Model is a method that is stated in Regulation 833, Schedule 1.

Compliance Considerations

Example: Dealing with work shifts longer than 8 hours per day

Consider a work schedule of seven 12-hour workdays per week, on a two in- two out rotation (average 42 working hours per week) for a worker who is exposed to carbon monoxide (CO).

If the worker is exposed to 25 ppm CO (the value of the OEL) for a duration of 12 hours in a day, the worker's daily TWA exposure, calculated according to Regulation 833, would be 37.5 ppm.

Daily TWA Exposure = $(25 \text{ ppm} \times 12 \text{ hrs}) / 8 = 37.5 \text{ ppm}$

This is an overexposure, since the calculated daily TWA exposure of 37.5 ppm is greater than the Ontario TWA limit of 25 ppm.

The Quebec Model gives an adjustment factor for this situation of 0.67, and an adjusted OEL of 17 ppm [$0.67 \times 25 \text{ ppm} = 17 \text{ ppm}$].

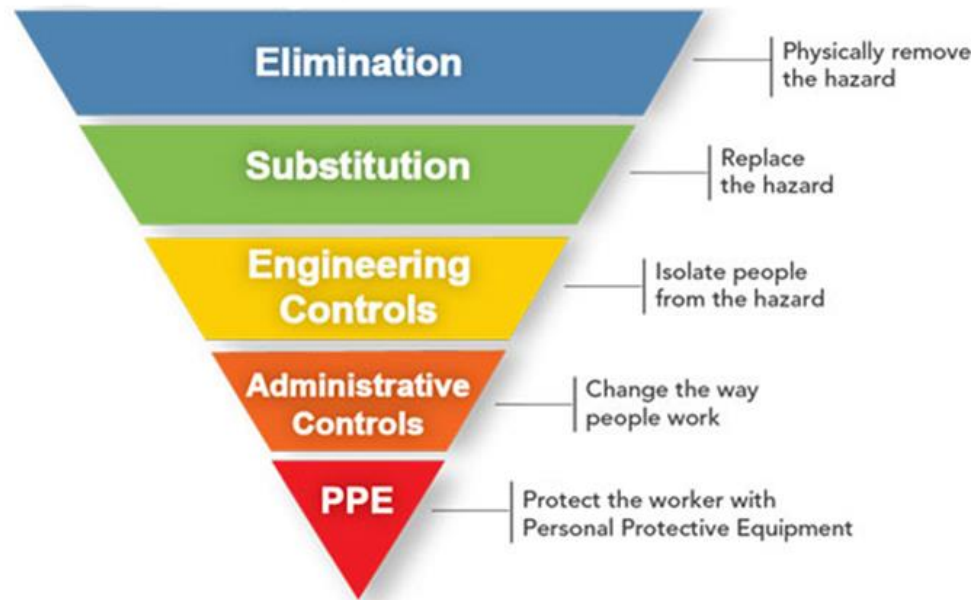
Comparing the measured CO exposure to the adjusted OEL also shows an overexposure, since the measured 12-hour exposure of 25 ppm is greater than the adjusted OEL of 17 ppm.

So, either method gives the same result - identifying that the worker is overexposed to CO!

Compliance Considerations

What AHMP elements may occupational hygienists look at during inspections?

Control measures



- Was hazard elimination considered?
- What controls are in place?
- Are control measures effective?
- How are control measures maintained?

Compliance Considerations

If respirators are used as a control measure, Occupational Hygienists may check on these requirements:

- Written respiratory protection program
- Worker training and fit testing
- NIOSH approved or equivalent
- Use, storage and care according to the manufacturer's instructions
- For tight-fitting respirators, workers are clean shaven where the respirator meets the skin
- Other requirements for respirators under Regulations 833 or 490/09



Requirements for Diesel-Powered Equipment

Key section of Regulation 854 regarding the use of diesel-powered equipment include:

- **Section 183:** general requirements for diesel-powered equipment used in underground mines
- **Section 183.1:** airflow rates where diesel-powered equipment is operated in underground mines
- **Section 183.2:** occupational exposure limit for elemental carbon from diesel emissions in underground mines
- **Section 183.3:** worker exposure testing in underground mines
- **Section 183.4:** tailpipe testing of diesel-powered equipment in underground mines

General Requirements for Diesel-Powered Equipment Section 183

Record Keeping

- Diesel-powered equipment first used in an underground mine after June 1, 1995, must meet the requirements established in CSA M424.2-22 Non-Rail-Bound Diesel-Powered Machines for use in Non-Gassy Underground Mines.
- Mines are required to maintain records for each piece of diesel-powered equipment used underground. At minimum, the records must contain the following information:
 - Make, model and serial number
 - Rated power, rated engine revolutions per minute (RPM), and maximum fuel injection rate
 - Ventilation rate as certified in accordance with CSA M424.2-22
 - Make, model and serial number of any emission control devices used with the equipment
 - Capacity of both the fuel and hydraulic fluid tanks

General Requirements for Diesel-Powered Equipment Section 183

Ventilation Requirements

- Employers at underground mines must keep and maintain information about:
 - The volume of air flowing in haulage ways and workings where the equipment is operating; and
 - The total ventilation requirements for the equipment when it is operating in a single continuous course of air.
- This information must be provided directly to the operators or available to them in a readily accessible format.

Operator Information

- Section 183.1 (4) further requires that each piece of diesel-powered equipment must have the airflow posted in a location on the equipment that is visible to and readable by the operator.
- Although not defined in the regulation, a single continuous course of air is generally considered to be:
 - A continuous path where the same air remains between entrance and exit; or,
 - A continuous path where the same air remains until a new air source enters; or,
 - A path with a continuous source of air that has no addition from other sources.

General Requirements for Diesel-Powered Equipment Section 183

Fuel Requirements

- Diesel fuel used in underground mines must meet one of the three following Canadian General Standards for diesel fuel:
 - Canadian General Standards Board CAN/CGSB-3.517-2020 Diesel Fuel
 - Canadian General Standards Board CAN/CGSB-3.520-2020 Diesel fuel containing low levels of biodiesel (B1-B5)
 - Canadian General Standards Board CAN/CGSB-3.522-2020 Diesel fuel containing biodiesel (B6-B20)
- All diesel fuel used underground, regardless of what fuel standard applies, must have a minimum flash point of 52°C.



Diesel Equipment – Air Flow Rates

Section 183.1

Section 183.1 sets out air flow rates where diesel-powered equipment is operating. Employers must ensure that, in these areas, a mechanical ventilation system produces a minimum flow of air in accordance with the following rules:

Rule 1

- For equipment certified in accordance with CSA Standard M424.2, the flow of air needs to be at least equal to the recommended ventilation rate on the certificate of homologation provided by CanmetMINING, Natural Resources Canada.

Rule 2

- For equipment that is not certified in accordance with the CSA Standard, the flow of air needs to be at least 0.06 cubic metres per second (known as the 100cfm rule) for each kilowatt of power of the equipment, as was previously required.

Diesel Equipment – Air Flow Rates

Section 183.1

Rule 3

- If the equipment has been modified with a DPF or similar after-treatment device but was not certified or recertified under CSA M424.2 after modification, the employer shall consult with the JHSC or HSR, if any, and determine a suitable flow of air based on:
 - The applicable rates for the equipment prior to modification,
 - Good engineering practices, and
 - The results of testing performed on the equipment, including emission levels produced after the installation of a DPF or similar after-treatment device.

Rule 4

- Where more than one piece of diesel-powered equipment is operating in a single continuous course of air in an underground mine, the flow of air must be at least equal to the cumulative ventilation rates as determined under the new rules.

- If a DPF or after-treatment device is used, it must be maintained in accordance with the manufacturer's recommendations.

Exposure Limits to Diesel Particulate Matter (DPM) Section 183.2

- Diesel emissions in underground mines contain various contaminants, including carbon monoxide, oxides of nitrogen, and diesel particulate matter. Prolonged exposure can lead to health issues, including cancer.
- Currently, the best way to assess worker exposure to DPM is to measure airborne elemental carbon concentrations in the ambient atmosphere.
- Elemental carbon is used as a surrogate for measuring DPM levels because it can be accurately measured at low concentrations and diesel engines are likely the only source of submicron elemental carbon in underground mines.
- The time-weighted average (TWA) exposure of a worker to elemental carbon shall not be more than 0.12 milligrams per cubic meter (mg/m³) of air.



Worker Exposure Testing

Section 183.3

- Employers at underground mines must conduct testing of the volume of air flowing in underground haulage ways and workings where diesel-powered equipment is operating at least weekly.
- A worker may request that the employer test their personal exposure to carbon monoxide (CO), nitrogen dioxide (NO₂), or elemental carbon.
- The results of the tests must be:
 - Recorded and maintained
 - Readily available at the mine site
 - Shared with the JHSC or HSR, if any, on request

Worker Exposure Testing

Section 183.3

- If worker exposure tests indicate a worker has been exposed to CO or NO₂ in excess of the limits as set out in section 4 of Regulation 833 (Control of Exposure to Biological or Chemical Agents), or elemental carbon in excess of the limit set out in section 183.2, subsection 183.3 (4) requires the employer to:
 - Investigate the cause and take remedial action, if possible, to prevent recurrence
 - Notify the affected worker(s) and the JHSC or the HSR, if any, of the exceedance
 - Re-test and confirm that the concentrations do not exceed the applicable limits



Compliance Considerations

Worker Exposure to Diesel Emissions

MLITSD Occupational Hygienists may check on these requirements:

- Monitoring, sampling and determining worker exposure follow sound industrial hygiene practice, for example, with respect to sampling strategy, sampling procedures, equipment, laboratory analysis, quality assurance, documentation, certification/ accreditation, and data assessment, as required by subsection 6(1) of Regulation 833.
- For elemental carbon, the standard method is the U.S.' National Institute for Occupational Health (NIOSH) "Method #5040 DIESEL PARTICULATE MATTER" (as Elemental Carbon). Direct reading EC monitors can be used for purposes such as tracking trends, identifying sources, and evaluating the effectiveness of controls.
- When direct reading instruments are used, for example for EC, CO or NO₂, the employer must ensure that instruments are used, calibrated and maintained according to the manufacturer's instructions, as required by subsection 6(2) of Regulation 833.

Additional considerations for determining underground airflow rates Section 252

- General ventilation requirements have been streamlined and clarified and are now set out in one section (section 252)
- Ventilation systems must still provide an oxygen content of at least 19.5%, as well as:
 - clear workplaces of contaminants after a blast
 - not recirculate contaminated air
 - be independent of air supplied to a drill or machine
 - be initiated prior to workers entering a workplace
- Mines and mining plants must develop and maintain written procedures to manage the hazards related to heat stress and cold stress in the workplace (Section 254).
- Regulation 833 (Control of Exposure to Biological or Chemical Agents) requires that employers take all measures reasonably necessary in the circumstances to protect workers from exposure to a hazardous biological or chemical agent because of the storage, handling, processing or use of such agent in the workplace.

Additional considerations for determining underground airflow rates Section 252

There will be situations where airflow rates based solely on diesel-powered equipment may not be sufficient for managing other airborne hazards in the workplace, such as silica, blasting contaminants, or heat.



Tail Pipe Testing Undiluted Exhaust

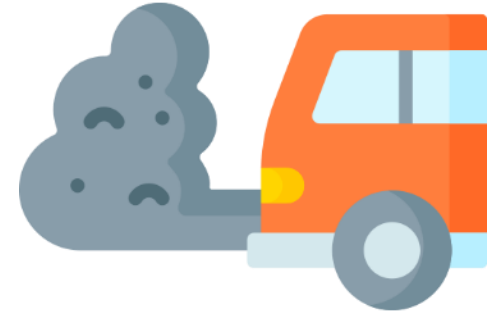
Section 183.4

- Tailpipe emission testing is critical to ensure engines and after-treatment devices are operating as designed.
- Employers must develop and implement safe measures and procedures for testing undiluted exhaust from diesel-powered equipment. These measures and procedures must be developed in consultation with the JHSC or HSR, if any.
- Each piece of diesel-powered equipment must be tested under consistent conditions and testing must be carried out under a full load, as far as is practical.
- Exhaust testing must be performed both routinely, at least once per month, or more frequently if required by the OEM and after any repairs are made to the engine or exhaust system.
- Employers must ensure that undiluted exhaust from diesel-powered equipment contains less than 600 parts per million by volume of CO and less than 60 parts per million by volume of NO₂.

Tail Pipe Testing Undiluted Exhaust

Section 183.4

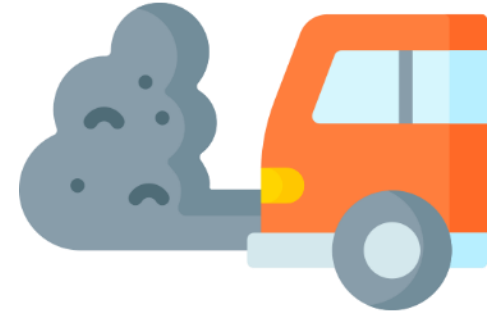
- All testing equipment should be used following manufacturer's recommendations.
- Use equipment which prevents condensation in the sampling line when testing for NO₂ as water can affect the sensor readings.
- To ensure tailpipe test consistency, tests must be conducted:
 - At normal engine operating temperature
 - At stabilized CO/CO₂ levels
 - While the engine is under full load as far as is practical



Tail Pipe Testing Undiluted Exhaust

Section 183.4

- Engines which fail to meet prescribed limits should be:
 - Removed from service
 - Inspected to determine the cause of the failure
 - Repaired where required
 - Re-tested to ensure compliance
- The results of all testing must be recorded and kept readily available at the mine site.



Tail Pipe Testing Undiluted Exhaust

Section 183.4 Compliance Considerations

- Tailpipe test devices are also direct reading instruments.
- MLITSD Hygienists may verify that the devices are used, calibrated and maintained according to the manufacturer's instructions, as required under subsection 6(2) of Reg. 833.
- MLITSD Hygienists may also request test records for specified diesel-powered equipment.



AHMP Compliance Checklist

Airborne Hazard Management Program- General Requirements	REGULATION 854
Written program prepared in consultation with JHSC (how is consultation demonstrated?)	ss.182 (1)
<ul style="list-style-type: none"> • Copy available at the workplace and provided to JHSC or HSR 	ss.182 (3)
<ul style="list-style-type: none"> • Reviewed annually 	ss.182 (4)
<ul style="list-style-type: none"> • Reviewed after change to process, work method or ventilation 	ss.182 (5)(a)
<ul style="list-style-type: none"> • Reviewed after change to chemical or biological agents used 	ss.182 (5)(b)
<ul style="list-style-type: none"> • If program was reviewed under subsection 182(5), next review is within one year 	ss.182 (6)
Training	
<ul style="list-style-type: none"> • The program describes the training that is required for the person responsible for implementing the program 	ss.182 (2)(f)
<ul style="list-style-type: none"> • Workers are trained on the contents of the program as appropriate to them (information and instruction) per OHSA s.25 (2)(a) 	ss.182 (7)

AHMP Compliance Checklist

Required Program Elements	REGULATION 854
<ul style="list-style-type: none"> List of airborne hazards and potential airborne hazards as in s. 5.1 Risk Assessment (and Designated Substance Assessment, if applicable) 	ss.182 (2)(a)
<ul style="list-style-type: none"> List of control measures for airborne hazards as in s.5.2 	ss.182 (2)(b)
<ul style="list-style-type: none"> Sampling and monitoring: number of samples, frequency and locations are laid out 	ss.182 (2)(c)
<ul style="list-style-type: none"> Measures and procedures to maintain control systems 	ss.182 (2)(d)(i)
<ul style="list-style-type: none"> Measures and procedures to monitor effectiveness and performance of the controls 	ss.182 (2)(d)(ii)
<ul style="list-style-type: none"> Roles and Responsibilities - name and title of persons who implement the program and who do the testing, sampling and monitoring (including testing and monitoring the performance of control measures) 	ss.182 (2)(e)

Underground Diesel-Powered Equipment Compliance Checklist

Requirements	REGULATION 854
<ul style="list-style-type: none"> UG diesel-powered equipment meets CSA Standard M424.2:22 	ss.183 (1)
<ul style="list-style-type: none"> There is a recorded list of every piece of diesel-powered equipment used underground 	ss.183 (2) & (3)
<ul style="list-style-type: none"> The employer maintains information about the airflow rate where diesel-powered equipment is operating and provides it to the operators 	ss.183 (4) & (5)
<ul style="list-style-type: none"> Diesel fuel used underground meets one of the three CGSB Standards and has a minimum flashpoint of 52°C 	ss.183 (7)
<ul style="list-style-type: none"> An airflow rate has been determined under one of the four rules and is being provided as required in the workplace 	ss.183.1 (1)
<ul style="list-style-type: none"> Diesel particulate filters or after-treatment device are maintained in accordance with the manufacturer's recommendations 	ss.183.1 (3)

Underground Diesel-Powered Equipment Compliance Checklist

Requirements	REGULATION 854
<ul style="list-style-type: none"> The TWA exposure of a worker to elemental carbon is not more than 0.12 milligrams per cubic metre of air (mg/m³) 	s.183.2
<ul style="list-style-type: none"> The employer tests the volume of air flowing in underground haulageways and workings where diesel-powered equipment is operating and the volume of air flowing in the workplace and the concentration of carbon monoxide, nitrogen dioxide, or elemental carbon in the atmosphere of the workplace. 	s.183.3
<ul style="list-style-type: none"> The employer has investigated the cause, taken action, notified the worker and the JHSC or HSR (if any) and re-tested if a worker has exceeded the TWA limits for elemental carbon (0.12 mg/m³), CO (25 ppm) or NO₂ (3 ppm). 	ss.183.3 (4)
<ul style="list-style-type: none"> The employer has established procedures for and routinely tests undiluted exhaust. Exhaust has less than 600 ppm of CO and less than 60 ppm of NO₂. Results are kept and shared with the JHSC or HSR (if any) 	s.183.4

2024-2025 MHSP Campaign:

Airborne Hazard Management Program

Resources and Compliance Assistance

[Airborne Hazard Management Program guideline](#) - MLITSD

[Ventilation Requirements for Diesel-Powered Equipment in Underground Mines guideline](#) - MLITSD

[A Guide to Designated Substances in the Workplace](#) - MLITSD

[Workplace Safety North Occupational Disease Resources](#)

[OHCOW Occupational Exposure Limits \(OEL\) Adjustment Tool](#)

[OHCOW Mining Resources](#)

Airborne Hazards

- Airborne hazards can include several environmental contaminants
 - Gas, vapour, aerosol, dust, mist, fumes
- Airborne hazards can be generated through a variety of surface mining activities
 - Crushing, hauling, blasting



Common Exposures

- Silica (quartz)
- Respirable dust
- Diesel particulate matter (DPM)
- Metals (lead, manganese, iron oxide)
- Carbon monoxide (CO)



Contact



Ingestion

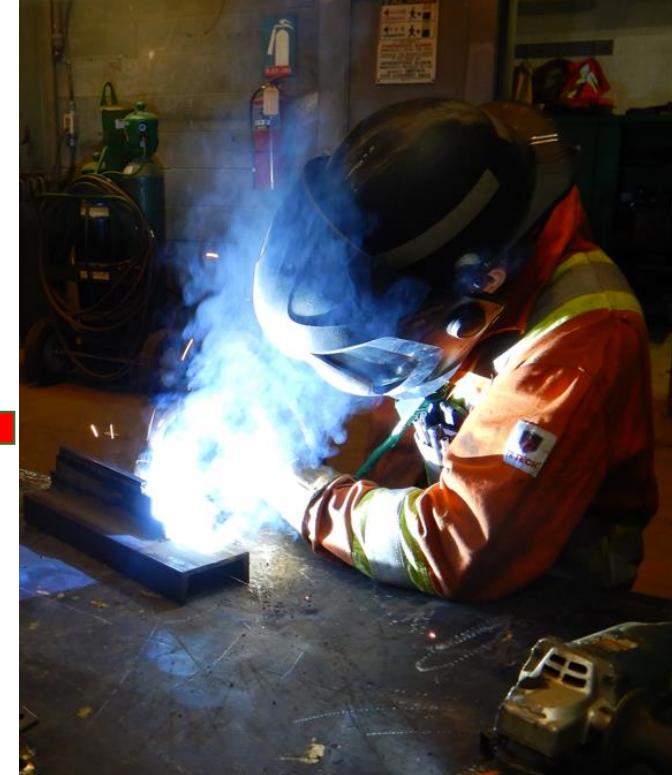
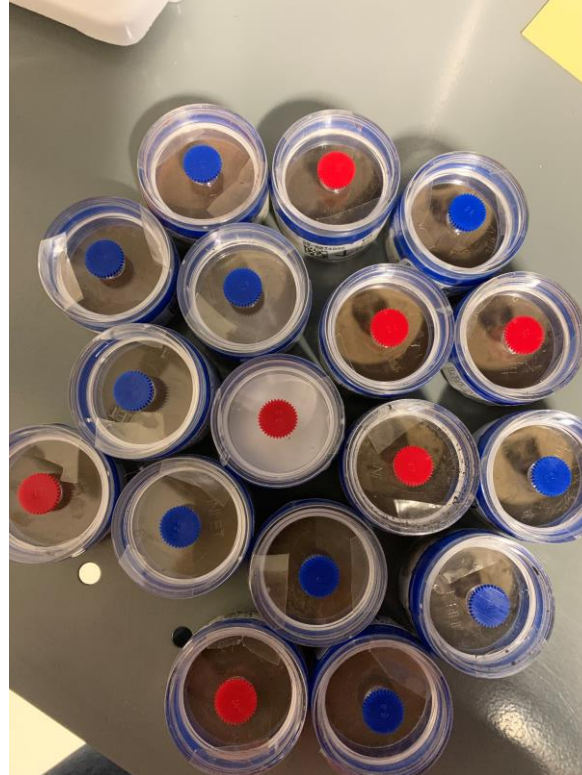


Inhalation



SEG: Welder, Millwright

- Location: 15 workers working underground and surface shop, field
- Job: hot work activities, mechanical repair
- Chemicals: respirable dust, metals, CO
- Equipment: grinder, welding equipment, mechanical tools



WSN Support

- Provide assistance and review risk assessments regarding airborne hazards (airborne hazard recognition).
- Provide recommendations on hazard controls.
- Evaluate whether implemented controls are effective.
- Develop training/education materials (hazard specific).
- Provide education and training.
- Conduct industrial hygiene monitoring.



WSN Resources

[Dust control using a water curtain system during shotcrete application – recommended best practice](#)

[Free training and resources on diesel emission hazards for all industries](#)

[Poster: Health effects of diesel exhaust](#)

[Poster: Proper use of respirators in mines and mining plants](#)

[Simple solutions for dusty environments at metal and nonmetal mines](#)

[Mining webinar: New diesel exposure limit for underground mines in Ontario](#)

Thank you for helping make workplaces safer

Questions?

For addition information, please contact:

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Ministry of Labour, Immigration, Training
and Skills Development

1-877-202-0008 Toll free Ontario

[Health and Safety Contact Centre](#)



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