



Mining webinar: How to prepare for Ontario workplace inspections on hazardous materials training and worker exposure to chemical agents

Occupational Hygiene Workplace Inspection Campaigns 2024-2025

May 23, 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.

Webinar hosts

Judit Nelson

Industrial Hygiene Specialist

Workplace Safety North

Ina Chomyshyn

Occupational Hygiene Consultant, Northern Region

Ministry of Labour, Immigration, Training and Skills Development

Agenda



- MLITSD Occupational Hygienists
- 2024-2025 Workplace Inspection Campaigns
- Worker Exposure to Chemical Agents
- Updated WHMIS Training Requirements
- Training and Resources

Ministry of Labour, Immigration, Training and Skills Development

Disclaimer

- The purpose of today's presentation is 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.
- It is the responsibility of the workplace parties to ensure compliance with the legislation and this presentation does not constitute legal advice. If you require assistance with respect to the interpretation of the legislation and its potential application in specific circumstances, please contact your 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.

MLITSD Occupational Hygienists

- Work in the Specialized Professional Services Unit.
- Provide technical support to ministry inspectors.
- Conduct inspections, investigations and industry-wide air quality surveys to identify and assess the risk factors that contribute to occupational diseases and illnesses in workers.
- Focus on industrial hygiene to protect workers from chemical, biological and physical agents that can make them ill.
- Follow the annual [health and safety inspection compliance plan](#).

MLITSD Occupational Hygienists

- Help to enforce Ontario occupational health and safety legislation that deals with occupational hygiene issues, including the following:
 - Occupational Health and Safety Act
 - O. Reg. 632/05 - Confined Spaces
 - O. Reg. 381/15 - Noise
 - O. Reg. 490/09 - Designated Substances
 - O. Reg. 833/90 - Control of Exposure to Biological or Chemical Agents
 - O. Reg. 860/90 - Workplace Hazardous Materials Information System (WHMIS)
 - O. Reg. 278/05: Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations
 - Sections of the workplace sector regulations that deal with chemical handling, engineering controls and personal protective equipment

2024-2025 Compliance Plan

Occupational Hygiene Inspection Campaigns

Phases

1. Education and Outreach: April 1, 2024 to March 31, 2025

MLITSD hygienists may inform workplace parties that this campaign is taking place, with inspections starting in July. The MLITSD health and safety partners (WSPS, IHSA, PSHSA, WSN, OHCOW) will also be promoting the campaign.

2. Enforcement: July 2, 2024 to March 31, 2025

MLITSD hygienists will conduct proactive inspections in workplaces where the relevant regulations apply.

There is no specific focus on any particular exposure, job task or industry. Mining workplaces such as underground and open pit mines, quarries and pits, mining plants and assay labs are included.

2024-2025 Compliance Plan

Occupational Hygiene Inspection Campaigns

Two Campaigns:

- Worker exposure to chemical agents in the workplace
- WHMIS training based on the amended Hazardous Products Regulations



Inspection Campaign: Worker Exposure to Chemical Agents

Worker Exposure to Chemical Agents

Rationale for the Campaign

Exposure by all routes (inhalation, skin contact or ingestion), can cause [occupational illness](#) or injury, whether the exposure is short term ACUTE or long term CHRONIC.

Short term effects:

- Respiratory, skin and eye irritation
- Headache, dizziness, nausea

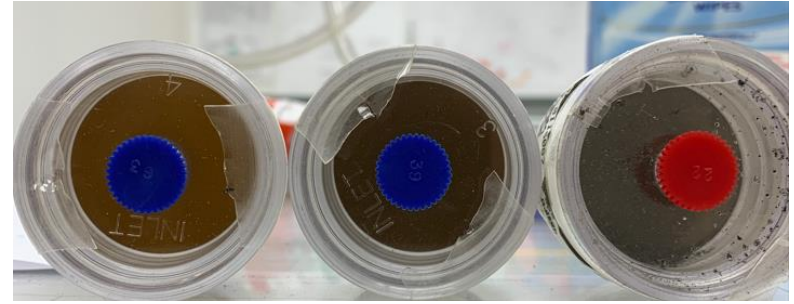
Long term, delayed effects:

- Lung diseases, respiratory or skin sensitization, effects on organs or body systems, cancer



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Examples of Common Health Effects



- **Respiratory, skin and eye irritation:** During cement mixing, application; use of chemicals such as in a mechanical shops; welding fumes; working in a hot environment induces symptoms on skin.
- **Headache, dizziness, nausea:** Exposure to CO in poorly ventilated work areas; exposure to diesel exhaust.
- **Lung diseases:** General dust exposure; silica dust during handling of muck; diesel fumes.
- **Respiratory or skin sensitization:** Nickel exposure conveyor belt areas; mucking; isocyanate exposure (glue, foams, pumpable resin).
- **Effects on organs and body systems:** Lead during paint removal from mobile equipment; metal fumes conducting hot work activities.
- **Cancer:** caused by silica, various metals, diesel exhaust for example: rectal cancer (gold mining), kidney and prostate cancer (coal mining), lung cancer (gold and uranium mining).

Worker Exposure to Chemical Agents

MLITSD Occupational Hygienists will:

- Conduct proactive inspections to ensure compliance with [R.R.O. 1990, Regulation 833: Control of Exposure to Biological or Chemical Agents \(833/90\)](#).
- Assess whether employers are taking all reasonable measures to protect workers from exposures.
- Ensure that worker exposures to airborne chemical agents are below the Ontario occupational exposure limits (OEL).

Worker Exposure to Chemical Agents

What are the Ontario Occupational Exposure Limits (OEL)?

Airborne concentration limits:

- Time Weighted Average limits (TWA), Short Term Exposure limits (STEL) and Ceiling limits (C).
- Where an agent does not have a STEL or a C limit, excursion limits of 3X the TWA for any 30-minute period and 5X the TWA at any time.
- For some chemical agents, the limits are set out in the “Ontario Table” in 833/90.
- For some chemical agents, 833/90 adopts the ACGIH 2017 TLVs.

The Ontario OELs are posted on the MLITSD web site: [Current occupational exposure limits for Ontario workplaces under Regulation 833](#).

Worker Exposure to Chemical Agents

Compliance Considerations

The Ontario exposure limits are time weighted average (TWA) limits. Occupational hygienists may review calculations:

Example: TWA exposure for a 10-hour shift

- If a worker has a measured carbon monoxide (CO) exposure of 22 ppm over a ten-hour shift, is the exposure higher than the Ontario TWA limit of 25 ppm?
- The worker's TWA exposure is calculated according to Schedule 1 in Reg. 833, as follows:
 - **Daily TWA Exposure** = $\frac{C_1T_1 + C_2T_2 + \dots + C_nT_n}{8}$
- *Where:* C is the measured concentration, and T is the time the worker is taken to be exposed to that concentration.
 - **Daily TWA Exposure** = $\frac{22 \text{ ppm} \times 10 \text{ hrs}}{8}$
 - **Daily TWA Exposure** = 27.5 ppm
- The calculated Daily TWA exposure of 27.5 ppm is higher than the Reg. 833 carbon monoxide TWA exposure limit of 25 ppm.

Worker Exposure to Chemical Agents

Compliance Considerations

During inspections, MLITSD Occupational Hygienists will **identify** chemical exposures in the workplace.

They may:

- Review Safety Data Sheets and labels.
- Observe equipment, work tasks and work practices to assess the potential for exposure by inhalation, skin contact and ingestion.
- Examine gas monitors and calibration equipment.
- If air monitoring has been done, review the results.
- Collect and review other workplace information.

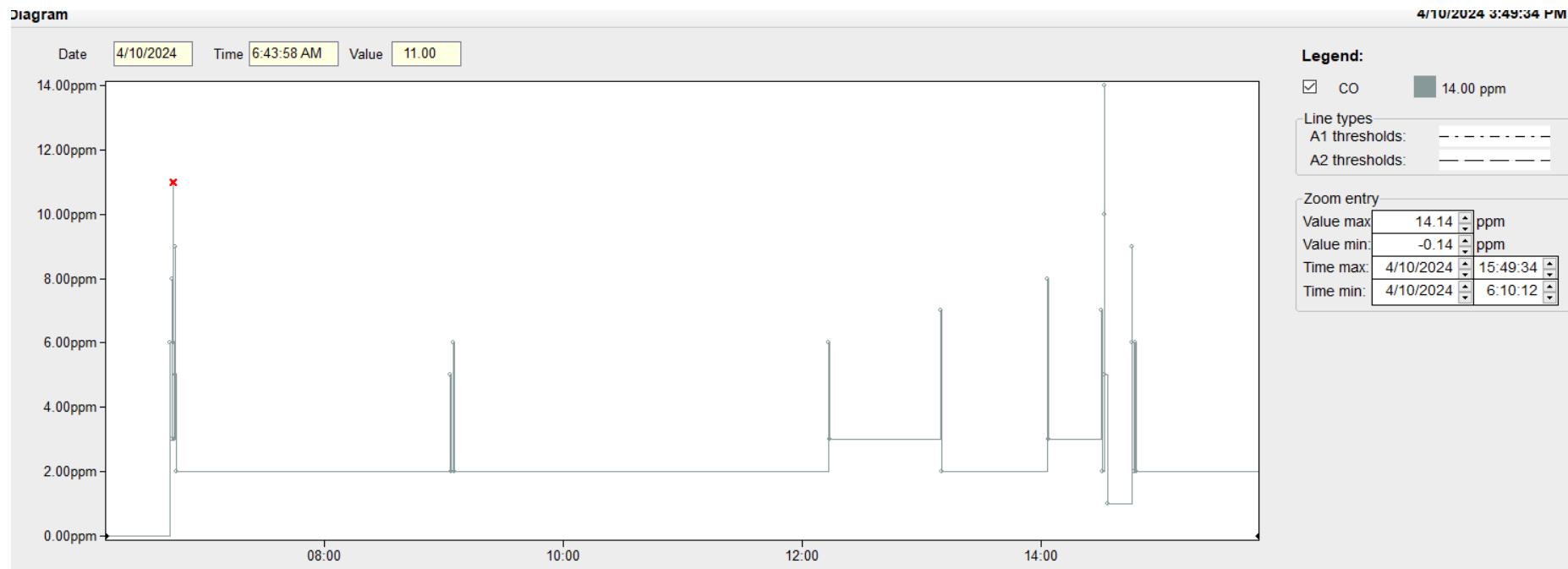


What Can I Do to Improve Compliance?

- Review Safety Data Sheets and labels
 - Inspect fire cabinets; is there a chemical that has no SDS?
 - Audit the SDS; are they current? Quick to recognize pictograms (red diamond), 16 sections, publication date.
- Observe equipment, work tasks and work practices to assess potential exposure by inhalation, skin contact and ingestion.
 - Conduct site visits; are people wearing their PPE correctly? Is dust control present during muck transfer activities? Chemical spillage in storage areas?
- Examine gas monitors and calibration equipment
 - Is there a current calibration certificate? Calibration gas does expire. Does the operator understand how the equipment works and its limitations?

What Can I Do to Improve Compliance?

- After air monitoring has been done, review the results
 - Have the results of air monitoring been shared with the workers and JHSC. Recordkeeping.



Worker Exposure to Chemical Agents

Compliance Considerations

During inspections, MLITSD Occupational Hygienists will **determine** the level of exposure.

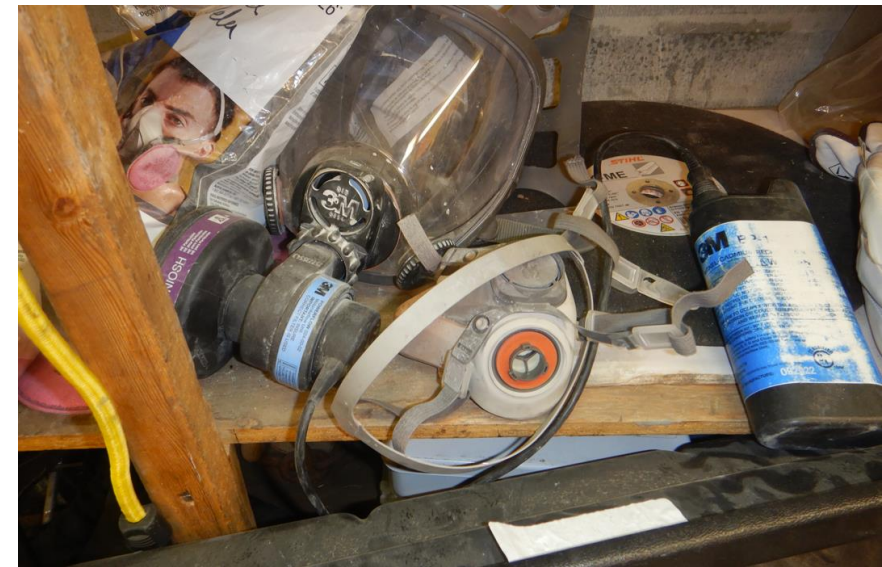
They may:

- Make air quality tests with direct reading instruments.
- Test air flow at ventilation systems.
- Review available air sampling results to see if workers have been exposed above the OELs.
- Identify what control measures are in place.
- Review the programs for respiratory protection, designated substance or airborne hazard management.



What Can I Do to Improve Compliance?

- When conducting IH assessment, ask ventilation personnel to take airflow measurements. This allows better understanding of sampling results.
- Ensure sampling results are summarized in a manner where the data can be accessed, read easily and organized to allow statistical analysis.
- Ask workers to provide information on what controls were used during the monitoring, and under what environmental conditions.
- Ask workers if they received training on specific hazards to identify any gaps in training requirements.
- If there is an exceedance, was investigation and follow up monitoring completed?
- Observe how and where PPE is stored and cleaned.



Worker Exposure to Chemical Agents

Compliance Considerations

During an inspection, if an MLITSD Occupational Hygienist **recognizes** non-compliance or needs more information

They may:

- Issue [orders or requirements](#) under the Occupational Health and Safety Act or O. Reg. 833/90 or other applicable Ontario regulations.
- Orders can be time based or tied to a “stop work” or a “compliance plan.”
- The employer may have to retain the services of a qualified occupational hygiene consultant to comply with a requirement for air sampling or an exposure assessment.

WSN Support

- Field visits and general recommendations for improvement
- General exposure assessment, designated substance assessment, ventilation assessments
- Gap assessments of industrial hygiene management system
- Provide or develop training material, control programs and policies
- Provide recommendations for sampling equipment
- Meet with JHSC members to provide additional information and answer questions
- Review of documentation; recommendations for improvement
- Mentor on-site professionals to increase knowledge of IH related topics



Inspection Campaign: WHMIS training



WHMIS Training

Rationale for the Campaign

Health Canada amended the Hazardous Products Regulations in December 2022.

Suppliers have three years, until December 2025, to comply with hazard classification and safety data sheet (SDS) requirements.

Employers need to be aware of the changes.

Workers may need updated WHMIS training.



WHMIS Training

MLITSD Occupational Hygienists will:

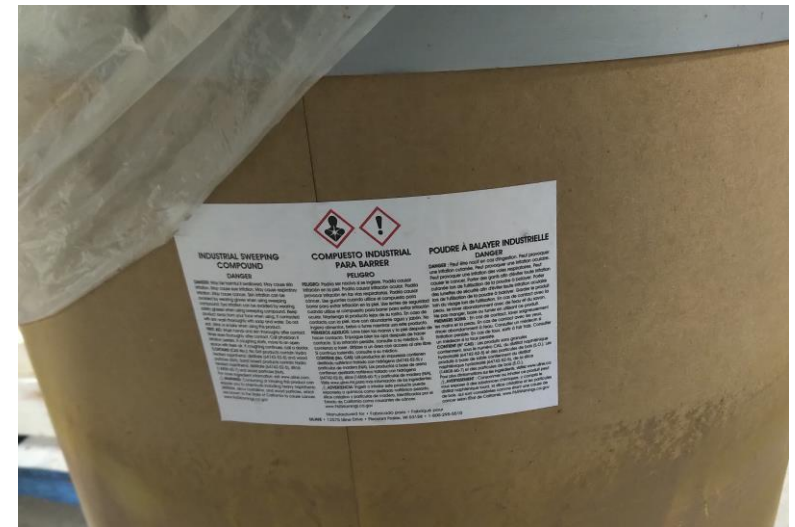
- Conduct proactive inspections to ensure compliance with [O. Reg. 860/90 Workplace Hazardous Materials Information System](#).
- See if any 'hazardous products' are used in the workplace.
- Ensure that current safety data sheets (SDS) are available to workers.
- Examine labels and SDS to see if they comply with the amended HPR requirements.
- Review workers' WHMIS training to see if it is current and specific to the hazardous products and tasks in the workplace.

WHMIS Training

Compliance Considerations

During inspections, MLITSD Occupational Hygienists may:

- Look at chemical products that are stored, handled and used in the workplace.
- Talk to workers about the products they use, hazards, protective measures and training.
- Look at WHMIS training materials.



WHMIS Training

Compliance Considerations

During an inspection, if an MLITSD occupational hygienist **recognizes** non-compliance or needs more information

They may:

- Issue requirements, for example, for WHMIS training records.
- Issue orders for retraining, for example, WHMIS training that includes informing workers about the HPA amendments that may change the information on labels and SDS, or may change the precautions for safely working with the chemicals.
- Orders can be time based or tied to a “stop work” or a “compliance plan.”

WSN Support

- On site inspection of work areas, recommendations for improvement
- Review of SDS; provide recommendations for controls
- Provide additional training to demonstrate safe handling of chemicals
- Help develop workplace labels
- Provide recommendations for proper storage and control of spillage
- Review of in-house WHMIS training material



WHMIS Training

Resources

- Ontario [WHMIS regulation](#)
- MLITSD website [Workplace Hazardous Materials Information System – A guide to the legislation](#)
- Canadian Centre for Occupational Health and Safety [Fact Sheet on WHMIS](#)

Why are these two occupational hygiene inspection campaigns important for mining workplaces?

Both are tied to Airborne Hazard Management Programs

To identify potential airborne hazards, a workplace will have to do the following:

- Review safety data sheets for workplace products
- Consider chemical handling work tasks that could generate airborne hazards

Resources

[Workplace Environment Self-Assessment Checklist](#) – WSN

[Good Practice Guidance on Occupational Health Risk Assessment](#) – International Council on Mining & Metals

[Beyond Safety in Mining: What About Occupational Hygiene?](#) – BluMetric Environmental Inc.

[Recommended Best Practice for Dust Control Using a Water Curtain System During Shotcrete Application](#) – WSN

[Establishing and Implementing an Effective Industrial Hygiene Program](#) – Golder Associates Ltd.

[Welding Safety](#) – WSN

[Reducing Diesel Particulate Matter in Underground Mines: Two Successful Examples](#) – WSN

Thank you for helping make workplaces safer

Questions?

For addition information, please contact:

Judit Nelson

Industrial Hygiene Specialist

Workplace Safety North

juditnelson@workplacesafetynorth.ca

Ministry of Labour, Immigration, Training and Skills Development

1-877-202-0008 Toll free Ontario

<https://www.ontario.ca/>