



CANADIAN STANDARDS  
ASSOCIATION

*MINING SAFETY STANDARDS STAKEHOLDER FORUM –  
WHAT SHOULD CSA'S ROLE BE IN MINE SAFETY?*

*Date: January 19, 2009*

**Mining Safety Standards  
Stakeholder Forum**

November 27, 2008

Toronto, Canada

9:00 – 4:00 pm

CSA Conference Centre, Conference Room 8

**Meeting Proceedings**

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## Executive Summary

The Canadian Standards Association (CSA) hosted a Stakeholder Forum on November 27, 2008 to help determine CSA's future role in mining safety standards.

The mining industry in Canada is a world leader in technology, productivity, and health and safety practices. While CSA has 9 national, consensus-based standards covering equipment safety and work practices for mining operations, the majority of these standards are not current and need to be reviewed to determine how they should be updated to reflect the current needs of this important sector.

Over the last three years, CSA has received requests from stakeholders to update the mining safety standards. However, at the present time, very limited financial resources have been identified to help support this standards development activity. CSA is currently evaluating its mining safety standards portfolio to develop a future plan of action for this sector.

The forum was designed to encourage dialogue about the current state of CSA's mining standards and to provide an opportunity to identify potential solutions and future direction. A number of common themes were identified by the participants throughout the day as follows:

### a) Organizational

- Participants expressed strong support for an efficient approach to developing and maintaining CSA's portfolio of mining standards. Rather than having 9 Technical Committees, one overarching Technical Committee would provide a more efficient and effective structure.
- Technical Subcommittees should be established for specific standards work.
- To sustain the work, it is important to have regular two-way communication between CSA and members – including teleconferences and face-to-face meetings.

### b) Resources

- To ensure long term sustainability of the mining portfolio, it is important to get the right level of decision makers involved. One suggestion was to establish a steering committee or advisory committee to ensure ongoing support, direction and implementation of the standards.
- CSA needs to ensure that all stakeholders or communities of interest are involved in the work. In particular, there is a need to engage manufacturers, contractors, and installers.
- Regulators are looking for direction from CSA as they are currently doing regulatory reviews and that is a critical to link standards and their use.

### c) Standards Strategy

- Participants identified a number of strategies for maintaining and expanding the mining portfolio. It was recommended that some of the standards will need to be updated and others should be combined.
- Strongest interest was expressed for the work to update M421, *Use of Electricity in Mines*.

- Potential new areas of standards work will need to be evaluated, such as sector specific safety management systems standards.
- A key element of the overall strategy for this portfolio will be prioritization of standards work, given the limited resources of members and CSA.
- Critical to have a national strategy, which provides consistency across provinces, aligned with other standards and linked to regulatory requirements.
- Regulators want direction from CSA as they are updating regulations and it is critical to link the standards with mine regulations
- A national code of mining practice was identified as a strategic opportunity.
- In developing the strategy, CSA should not use sales of documents as a measure of the relevance of the standards – other performance indicators should be explored, as well.
- CSA needs to ensure that there is a focus on the research being done to ensure that the standards reflect new technology.

#### d) Communication

- There is a general lack of awareness of the CSA standards in this sector.
- Throughout the discussions at the Forum, participants identified the need for improved access to standards information. Tools such as CSA's pilot "View Access" initiative for OHS standards would be particularly useful for this sector.
- An ability to identify relevant standards across CSA's whole catalogue for the mining sector would be helpful.
- Participants supported the use of technology for improved communication and indicated an interest in web-based meetings to help contain costs and improve communication.
- There was general support for CSA standards related training products and information to complement the standards. While there are many other training providers to this sector, CSA should play a more active role in getting the message out about its mining safety standards.
- Overall, participants welcomed CSA's efforts to evaluate these standards and they encouraged CSA to maintain its presence in this area of standards.

#### e) Overarching standards

- There was general support for the tailoring of generic or horizontal standards for the mining sector. An example of this was ergonomics in light of the injury data and compensation costs. Another area suggested was a sector application of Z1000, *Occupational Health and Safety Management*.
- Overall, the participants felt that the mining sector has a strong safety culture that is based on the work performed over recent decades to significantly improve safety through approaches such as the Internal Responsibility System (outcome of the Hamm Commission on Mine Safety).
- Knowledge continuity is critical to the success of any managed system.

#### f) International/National Focus

- The participants expressed strong support for maintaining national standards for the mining sector. While provinces may have unique mining environments and safety issues, there are significant benefits to working towards national standards for Canada.
- With globalization in the mining industry, there will be a need to assess harmonization strategies for this sector. In some cases, it may make sense to adopt international standards rather than create made in Canada standards.

- Participants strongly supported the need for greater integration across CSA programs and to have a market sector approach. For example, participants identified a new standard developed by CSA's electrical program, C68.10, *Shielded Power Cable for Commercial and Industrial Applications*, is relevant for the mining sector, yet there has been little attempt to make members and the mining community aware of this standard. There is also a need for better links with stakeholder groups and associations across Canada in this sector to avoid duplication of effort and to identify potential synergies.

## Summary and Next Steps

The participants indicated that they felt the forum had achieved its objectives. Participants said that it was a good opportunity to learn about the standards and to network with other members. They were pleased that CSA was investing in this review and taking the mining standards seriously. It was suggested that the Forum could have been more productive if it had been combined with a kick off meeting for the updating of M421, *Use of Electricity in Mines*.

The results of this forum will be used to develop an overall strategy and implementation for this portfolio of CSA standards and future work. While the mining sector has experienced strong growth in the last few years, CSA recognizes that there have been recent slowdowns in exploration as a result of the global financial crisis. Nevertheless, the feedback from the participants and other stakeholders supports the need and value of maintaining the existing standards. In addition, there is a need to explore opportunities for other standards related products and services. CSA will continue to work with stakeholders to identify resources to support this work.

# **Mining Safety Standards Stakeholder Forum**

## **Report of Workshop Discussions**

### **Introduction**

This document summarizes discussions held during a workshop sponsored by the Canadian Standards Association in Mississauga on November 27, 2008. It covers key themes and points made by the participants. The meeting was facilitated by Paul Young, formerly of Ontario Power Generation and a leader in the development of CSA quality assurance standards for nuclear power plants. The forum, a dialogue design, used breakout groups in two workshop sessions; one held in the morning and one held in the afternoon. Each breakout group had seven to eight members, representing a range of stakeholder groups (e.g., mining operators, regulators, suppliers etc), and each group was facilitated by a CSA staff member.

### **Origins of the Forum**

The mining industry in Canada is a world leader in technology, productivity, and health and safety practices. While CSA has 9 national, consensus-based standards covering equipment safety and work practices for mining operations, these standards are not current and need to be reviewed to determine how they should be updated to reflect the current needs of this important sector.

Over the last three years, CSA has received requests from stakeholders to update the mining safety standards. However, at the present time, very limited financial resources have been identified to help support this standards development activity. CSA is currently evaluating its mining safety standards portfolio to develop a future plan of action for this sector.

### **Objectives for the Forum**

- To have an exchange between stakeholders who are actively engaged in the development and use of mining safety standards about:
  - the current state of voluntary standards for the mining sector; and
  - the potential needs of stakeholders for voluntary standards.
- To explore stakeholder interest in CSA standards solutions to meet current needs of the mining sector. This could include standards, guidelines or application tools.
- To provide an opportunity to explore potential participation and resources to support standards development for the mining sector.
- To obtain feedback and develop a road map for the CSA mining program.

## Workshop Participants

Workshop participants were stakeholders from the mining sector, primarily drawn from CSA's existing membership base in the mining portfolio. The following is a list of participants and their affiliations:

Claude Albert	Mansour Mining Inc
Jim Armstrong	Industrial Accident Prevention Association (IAPA)
Richard Banting	Mines and Aggregates Safety and Health Association
Danis Beaudoin	Cementation Canada
Reg Bennett	Government of Newfoundland and Labrador
Howard S. Boland	Goldcorp Inc - Mussewhite Mine
Heather Bowie	Ministry of Labour
Keith Clement	United Wire & Cable, Inc.
Michel Grenier	CANMET-MMSL
Dwight Harper	CAW-Canada
Dave Heron	Electrical Safety Authority
Kirk Huntley	Xstrata Nickel
Claude Leduc	Electrical Safety Authority
Garry A. MacDonald	Ministry of Energy, Mines and Petroleum Resources
Peter Mensour	Mansour Mining Inc
Bob Pawluk	United Wire & Cable, Inc.
Jim Pawluk	United Wire & Cable, Inc.
Mike Reiser	PSS - Ontario Ministry of Labour
John Robertson	Ministry of Labour
Ken Robertson	MWG Apparel Corp.
Wes Saworski	Saskpower - T&D
Rick Shulist	Ministry of Labour
Ehab Zalok	Carleton University

### Facilitator

Paul Young

### CSA Staff

Jeanne Bank  
Mike Dodd  
Dave Shanahan  
Shafinaz Begum

### Background Material

All participants were provided with a package of background material including an agenda for the Forum and a report, summarizing nine of CSA's current mining standards and issues to be discussed in the workshops. See Annex 1 and 2 for copies of these materials. A PDF copy of seven of the older CSA Standards to be reviewed was also sent out.

## **Context for Workshop**

To provide context for the workshop discussions, Mike Dodd, CSA Project Manager, presented an overview of CSA and a summary of CSA's work in the area of mine safety. A copy of the presentation is provided in Annex 3. Following the presentation, participants were provided with an opportunity to pose questions for clarification.

The participants were then assigned to one of three breakout groups and provided with a discussion guide. Each group reported back to the plenary following each workshop session. Each workshop group considered the same questions. The results of these discussions are summarized in this report.

## **Workshop # 1**

In this workshop, each group was assigned three standards for detailed review. Because there was general interest in M421, all groups were asked to review it in addition to their assigned three standards. At the end of the workshop, each group provided a summary to all the stakeholders. A summary of the review is provided as a separate attachment to this report, in tabular form.

### **Discussion Questions:**

1. Do you, or have you in the past, used this standard?
2. Based on your experience and knowledge, is this standard relevant and should it be maintained? If yes, please identify what specific updates are required.
3. Considering technology, how often should these standards be updated?
4. Could this standard be combined with another standard?
5. What other standards-related information is needed on subject area?
6. What other standards, regulations, or guidance material exist on this subject?

The result of the review of all the standards is summarized in a spreadsheet in Annex 4. This detailed review showed that some of the standards require updating. Others could be replaced or harmonized with ISO or other relevant standards and some could be combined to provide a broader application. Some of the standards are used as the basis for testing of equipment and need to be updated and maintained. Others are referenced in regulations and need to be updated to reflect current technology and practices. No standard was identified as being redundant. As each of the groups reviewed M 421, there was general support for the updating of this widely used standard as a priority.

While the exercise was only an initial review, it provided valuable information which can be used to help build a work plan for the updating of these older standards.

## Workshop # 2

This workshop focused on the broader context of CSA's role in mine safety. Using a discussion guide, participants examined the need for voluntary standards and guidelines for mining sector, supplementary products, and what is needed to support the creation, updating and implementation of required standards.

During the discussion on Workshop #2 the forum participants asked for the typical structure for a CSA committee in this program area. A brief discussion of the committee matrix is shown in Annex 5.

At the end of the workshop, each group provided a summary to all the stakeholders. The questions considered for discussion are listed below, followed by the key points raised by the breakout groups.

### Discussion Questions:

#### 1. What are the key issues facing your organization that impact on health and safety?

- Challenge of change management – how to get organizations to use latest technology
- Implementing a safety culture – what is the cost benefit of safety?
- Standards need to be referenced if they are to be used
- Demographics – the sector is facing considerable loss of human capital through retirements and the resulting loss of knowledge and experience
- Lack of enforcement of standards and regulations – there is no driver
- Need to view regulators as part of the safety team as they can facilitate improvements in safety
- Results-based regulations are difficult to apply – lots of loopholes, demands on industry, economy, etc
- There is a lack of standards – there is range of quality and equipment in field and there is difficulty in keeping pace with technology changes while still dealing with companies using older equipment (different levels of safety).
- It is critical to demonstrate that Senior Management support safety initiatives
- Need products that meet high quality standards
- There is a need for a more level playing field – consistency in proper use of equipment and safety practices
- Gaps in standards
- Need a greater focus on training
- Safety culture - Work practices/ behaviour is the primary issue - Guide on what safety culture looks like!
- Bill C45 is the legal requirement
- Labour mobility – across provinces – need for occupational standards in this sector to address the changing demographics

#### 2. What role do standards currently play in your organization's activities?

- Standards are tools to facilitate:
  - Process consistency,
  - level of certainty,

- level of legal protection (liability)
  - Basis for training.
  - Provide a basis for consistency in testing, manufacturing and engineering (Suppliers know what is expected in market and can save time and money)
  - Regulators use extensively to be able to explain legislation
- 3. Who should support standards work? ( please consider both financial support and member participation)**
- What's the value? What's the return on investment? CSA helps Canada and industry but we need to be able to show results
  - Federal/provincial governments
  - Manufacturers, users, matrix parties
  - All stakeholders in a given subject area
  - Funding support will depend on what type of standards are being developed and who the beneficiaries
  - Easier to get "in kind" contributions than direct financial funding
  - CSA needs to identify decision makers
  - While the mining sector has experienced growth, it is now suffering a slow-down due to the global financial crisis
- 4. Does your organization currently participate in CSA mining safety standards work or in other CSA standards work? If not, why not? Would you be willing to participate?**
- Most group member answered "yes" – to some extent.
  - Constraints
    - Financial
    - Resources and time available.
    - Expertise no longer available.
- 5. CSA is proposing a streamlined, efficient process for maintaining its mining safety standards, if supported by stakeholders. Do you have suggestions about how CSA could achieve these operational efficiencies?**
- Mining standards should be handled and organized under one overarching technical body.
  - Need to consider amalgamating standards and possible integration.
  - Possible to have several meetings to occur all at one time. (Annual meetings)
  - Possible to create regional sub-committees.
  - 3-5 year cycle (life cycle or review)
  - Steering committee or Advisory Committee for Mining with representation from: company executives; regulators; mining associations; unions
- 6. What stakeholders are needed at the table to develop mining sector safety standards?**
- Mine rescue (emergency organizations)
  - Research organizations (e.g., CANMET)
  - Testing and certification agencies
  - Manufacturers and suppliers
  - Professional organizations (consultants, engineers, etc.)
  - Chief Inspectors of Mines

- Service providers (maintenance and inspection)
  - Community? (as impacting safety)
  - Mining contractors, companies
  - Mining safety consultants
  - National Building Code representatives
  - National Review Body
  - OH&S and Safety Organizations
  - Installers
7. **How can CSA make its standards development work in the mining sector more relevant to needs of the mining sector? Are there organizations which CSA should partner with in this sector? Could CSA divest any of its standards activities to other organizations?**
- Work more closely with safety associations and mining associations.
  - Provide information and education to the mining sector (awareness).
  - Consider divesting only to recognized national or international standards body (not provincial or regional bodies).
  - Create Steering Committee for mining
  - look at adoption vs creating new standards
8. **Having heard about CSA's ability to provide standards "solutions" ( e.g. advisory services, supplementary application tools, standards information & access, etc. ), are there any areas where you feel that CSA could offer services to the mining sector?**
- Education
    - Training through on-line webinars – be fast to provide training
    - Manufacturers courses
    - Application tools (electronic and mobile)
  - Utilize what exists with manufacturers
  - Promote and publicize CSA standards and their value through various communication vehicles – e.g. Chief inspectors, CSA OHS View Access
  - Word search
  - Handbooks and interpretations for inspectors
  - Developed a simplified, comprehensive product – target audience (skilled trades)
  - CSA should increase its presence in the sector to maintain its core leadership in standards – attend conferences, more networking and communication, point person assigned to sector

## **Annex 1 – Workshop Agenda**

### **Agenda**

<b>Meeting:</b>	<b>CSA Mining Safety Standards Stakeholder Forum</b>
<b>Date:</b>	<b>November 27, 2008</b>
<b>Time:</b>	<b>9:00 am to 4:00 pm</b>
<b>Location:</b>	<b>Canadian Standards Association</b> 5060 Spectrum Way, Mississauga, ON – Conference Room 8
<b>8:30 – 9:00 AM</b>	<b>Registration and Continental Breakfast</b>
<b>9:00 – 9:20 AM</b>	<b>Introduction</b> Welcome from CSA & Housekeeping announcements Introductions
<b>9:20 – 9:30 AM</b>	<b>Forum Purpose and Goals – Facilitator</b>
<b>9:30 – 10:15 AM</b>	<b>Opening Presentations</b> <ul style="list-style-type: none"><li>• Overview of Current state – CSA Mining Safety Standards</li><li>• Role of standards solutions in meeting sector needs Q&amp;A</li></ul>
<b>10:15 – 10:45 AM</b>	<b>Refreshment Break</b>
<b>10:45 – 11:45 AM</b>	<b>Workshop #1</b> This workshop will focus on CSA's current activities and standards in mining. Participants will examine each of the 9 standards and provide their perspective on specific actions that should be taken for each of the standards.
<b>11:45 - 12:15 PM</b>	<b>Reporting back</b>
<b>12:15 – 1:15 PM</b>	<b>Lunch</b>
<b>1:30 – 2:30 PM</b>	<b>Workshop #2</b> This workshop will focus on the broader context of CSA's role in mine safety – using a discussion guide, participants will examine the need for voluntary standards and guidelines for mining sector, supplementary products, and determine what is needed to support the creation, updating and implementation of required standards.
<b>2:30 – 3:00 PM</b>	<b>Reporting back</b>
<b>3:00 – 3:20 PM</b>	<b>Refreshment Break</b>
<b>3:20 – 4:00 PM</b>	<b>Plenary Discussion on Next Steps</b> Summary of discussions and recommendations
<b>4:00 PM</b>	<b>Closing Remarks &amp; Adjournment</b>

## **Annex 2 – Background Information**

# **Backgrounder on CSA Mining Safety Standards Solutions November 2008**

### **Introduction**

The mining industry in Canada is a world leader in technology, productivity, and health and safety practices. While CSA has 9 national, consensus-based standards covering equipment safety and work practices for mining operations, these standards are not current and need to be reviewed to determine how they should be updated to reflect the current needs of this important sector. Many of these standards are referenced in provincial legislation. In addition to the 9 CSA Standards covering electrical safety in mines and mining equipment under the CSA OHS program, there are approximately 30 other mining related CSA Standards that are also referenced in legislation across Canada

CSA has received requests from stakeholders to update the mining safety standards, however, at the present time; very limited financial resources have been identified to help support this standards development activity. Canadian Standards Association (“CSA”) is currently evaluating its Mining Safety standards portfolio to develop a future plan of action for this sector.

To assist with the research on these standards, CSA has invited key mining safety stakeholders from across the country to provide input on the future direction of CSA’s Mining Safety Standards Portfolio through participation in the CSA Stakeholder Forum (“the Forum”) on November 27, 2008 at the CSA Office in Mississauga, Ontario. Participants representing interests of management and labour user groups, producers, regulators and general interests were invited.

This paper provides background on the current status of CSA’s work in the area of Mining Safety Standards. It provides information on consultations done to date as well as a summary of issues for consideration. It also includes the following Appendices:

- Appendix A – Agenda for Stakeholder Forum
- Appendix B - Content CSA Standards

### **Background on CSA’s Mining Safety Standards**

CSA’s Occupational Health and Safety Program covers a broad range of subjects from general workplace standards to sector –specific products and equipment. In the area of Mining Safety, the majority of the standards shown in Table 1 below were last published in the late ‘80’s and early ‘90’s. **Note: the full content of 7 of these older CSA**

**standards is provided as an attachment to this paper. M3450 is an adopted ISO standard and has not been attached.**

CSA Standards G4 and M421 were last published in 2000 and CSA M3450 was last published in 2003. Over the past 2 years CSA staff have undertaken research and consultation on these standards to identify potential options for the future of these standards. To allow time to complete the review, the seven older standards were reaffirmed in 2007. Prior to this, a proposal was made by CSA to withdraw all the mining Standards, with the exception of M421. However, this was met with resistance from the regulators. Many of the regulators reported they had legislation that referred to the existing standards and also their inspectors made use of the documents on a regular basis. Another standard, G4 on Steel Wire Rope has been transferred from CSA's Structures Program and added to the portfolio of OHS mining standards. Table 1 also shows where the various mining standards are referenced in Canada.

**Table 1- CSA Mining Standards and the Referencing Provinces**

Std No.	Title	Referenced in
M421-M85	Use of Electricity in Mines	QC
M421-93	Use of Electricity in Mines	BC, MB, NB, NU, NT,
M421-00	Use of Electricity in Mines	AB, SK, NS, YT
M422-M87	Fire Performance and Antistatic Requirements for Conveyor Belting	QC, SK, NS, NT, NU.
M423-M87	Fire Resistant Hydraulic Fluids	BC, AB, QC, NB
M424.1-88	Flameproof Non-rail-bound Diesel Powered Machines for Use in Gassy Underground Coal Mines	BC, AB, QC, NS
M424.2-M90	Non-Rail-Bound Diesel-Powered Machines for Use in Non-Gassy Underground Mines	BC, AB, SK, ON, QC, NB, NT, NU
M424.3-M90*	Braking Performance-Rubber-Tired, Self-Propelled Underground Mining Machines	AB, SK, ON (built after Oct 1, 1992 ON), NS
M3450-03*	Braking Performance-Rubber-Tired, Self-Propelled Underground Mining Machines (built after Oct 1, 2007 ON)	ON (machines built after Oct 1, 2007)
M427-M91	Fire-Performance and Antistatic Requirements for Ventilation Materials	AB
M430-90	Roof and Rock Bolts, and Accessories	NS
G4-00	Steel Wire Rope for General Purpose and for Mine Hoisting and Mine Haulage	MB, ON, QC, NB
<i>*Both M3450-03 and M424.3-M90 Standards are quoted in Ontario Mining Regulations and used depending when the machine was built.</i>		

CSA has a project to develop a Canadian standard based on NFPA 70E, Standard for Electrical Safety in the Workplace as CSA Z462, Electrical Safety in the Workplace. This standard will be published by January 2009. The scope of NFPA 70E excludes, among other areas, mines. Following consultation with stakeholders the CSA committee for Z462 included mines in the scope of Z462. Both Z462 and M421 will reference one another.

- M421 will focus on equipment and installation requirements for mining operations.
- Z462 will focus on safety procedures, qualifications, and PPE for electrical work.
- Future updates of both standards in parallel.

## CURRENT SITUATION

### ***Mining in Canada***

An initial scan of the industry determined that there are perhaps as many as 80 operating mines in Canada. A number of other properties have been identified as having potential and may be developed into mines given the right economic conditions. Throughout Canada approximately 400 deposit claims have been filed but very few of these would be developed into mines for a variety of reasons such as location or deposit value.

Most mining companies around the world have been actively addressing OHS and environmental issues for the past few years. Because of the political and social will in Canada, the mining companies have made great strides in both of these areas.

In developing countries, the World Bank has adopted more stringent environmental and social standards for any oil and mining projects it supports. Mining companies have raised concerns that tighter regulations will raise the cost of exploration, and the cost of their products but are moving to improve their OHS and environmental records.

### ***Key Issues in Canadian Mining Sector relevant to Standards Solutions***

While CSA has not conducted a comprehensive market assessment for this sector, initial consultations with stakeholders have identified the following potential issues which could be addressed through national consensus standards, supplementary application tools or other standards solutions.

- ***OHS Management Systems Standards:*** Canadian mining companies have made significant strides in reducing injuries and fatalities in recent years, compared to other industrial sectors. To make improvements in OHS performance, a tailored management systems approach could complement current standards and programs. A mining sector application of Z1000 may help Canadian mining operations in their efforts towards sustainable mining as it would integrate with other management system standards (e.g. environmental management systems) and processes currently in use.
- ***Human Resource Issues:*** The mining sector in Canada is currently facing serious human resource issues. The Mining Industry Human Resources Council anticipates a shortage of 92,000 workers during the next 10 years in mining, which will be especially hard hit by an inordinately high number of retirements. The industry is growing at twice the rate of the Canadian economy. CSA is currently engaged in conducting research and industry consultation on certification models that will assist the Mining Industry Human Resources Council (MiHR) in the further development of the Canadian Mining Credentials Program (CMCP). The project includes developing an analytical framework, researching existing certification models, authoring a Certification Models Inventory Report, developing an associated Recommendation Report and Consultation Presentation, organizing and facilitating an industry consultation workshop, developing a research and consultation results presentation to be presented to

the Standing Committee on Mining Credentials (SCMC), and provision of a final project report package. This project will be completed in November 2009.

- **Sector Specific Standards:** Voluntary standards have been developed for a wide range of health and safety issues. Some of these standards cover the following subjects: **Emergency Management and Business Continuity; General Workplace Ergonomics; Road Safety Systems; Accident Investigation; Selection, Use and Maintenance of Personal Protective Equipment; Management of Confined Space Entry; etc.** Is there a need to have sector applications of these standards for the mining sector?
- **Health and Safety Standards and enforcement:** While Canada has an excellent safety record in this sector, some concerns have identified over the years about the support for standards enforcement and inspection. With full stakeholder participation in setting standards, compliance is enhanced. While strong regulations may exist, can more be done to assist with getting information and guidance out to inspectors, employers and workers? What are the existing knowledge gaps? How can standards referenced in regulations be relevant and maintained as required?
- **New Technology and Best Practices:** The Canadian mining sector is continually improving safety for its workers. New methods exist to reduce exposure to hazardous situations. Canada is internationally recognized for its leadership in mining technology. Advances in technology in areas such as remote mining, virtual reality and mine rescue are providing better ways to help prevent injuries and fatalities. However, in many cases, these advances has not been reflected in updated national consensus standards or guidelines. Pan-Canadian standards and guidelines could assist with the implementation of this updated information and guidance.
- **Air Quality /Ventilation:** Industry's growing interest in deep mining and in reductions in energy consumption have increased the importance in recent years of underground climatic control and optimization of mine ventilation systems. CANMET is leading research in this area, working in partnership with experts on a number of initiatives. Is there a need to incorporate this work into voluntary standards?
- **Specific Mining Segment Requirements:** Recognizing the unique needs of different types of mining operations, do safety standards need to be developed or updated to address unique safety issues? For example, CANMET is leading an initiative on Underground Coal Mining Safety. Some provinces have identified related underground working that would benefit from the development of safety standards and that CSA mining portfolio should be expanded to cover issues such as excavation and trenching.

## Current Status of CSA Mining Safety Standards

### **Financial Viability of Mining Standards Portfolio**

Since 2000, the standards in the mining subject area have generated approximately \$15,000 per year in sales. The majority of the sales (87%) have been for M421, Use of Electricity in Mines. There has been no other funding support for the development and maintenance of the older standards. However, with work starting on G4 to develop a new edition, the Ontario Ministry of Labour has indicated a willingness to support the development of this particular standard.

### **Staff and Membership Resources**

At present, one CSA Project Manager has been assigned to the projects under the mining sector in the OHS program. There are approximately 85 members listed on the membership matrices for the 9 technical committees in this program area. Only two of the technical committees has functioning status (G 4 and M421). Both these committees have at least the minimum number of members in each interest category. The other 7 technical committees do not have functioning status. They are below the minimum number in at least one interest category of the matrix. One technical committee has no members. See Table 2 below.

**Table 2 - Technical Committee and Matrix Status**

TC File No.	Title	Matrix Status
S340	Use of Electricity in Mines	At or above minimum in all categories
S341	Blasting machines	below in all categories
S342	Mine hoisting	below in 3 of 4 categories
S343	Fire Resistant Ventilation Materials	below minimums in all categories
S344	Rock bolts	below minimum in 3 of 4 categories
S345	Off-Road Dumpers	below minimum in 1 category
S346	Radio Frequency Radiation Hazard in Mines	currently no members
S367	Wire Rope	At minimum in general interest category and 3 below minimum in producer category.

## CONSULTATIONS

In March 2007, CSA was approached by Sciences Laboratories, CANMET, and NRCAN to provide copies of the standards to the Chief Inspectors of Mines in an effort to create an informed dialogue on the need to maintain the CSA mining standards. CSA provided the members of the Association of Chief Inspectors of Mines with PDF copies of the existing standards and followed up with a web-based survey to obtain feedback on CSA's role in Mine Safety. The web-based survey was sent to 19 members of the Association and 12 responses were received. Responses were received from all provinces and territories with mining operations. The survey size is small and it covered the base of regulators who make use of the mining standards.

There was strong support from the respondents that the existing standards were relevant and might benefit from minor updating. When the survey recipients were asked if the standards should be maintained, 100% of the respondents agreed the standards should be maintained and 80% of the respondents either agreed to participate or have someone from their organization participate in the review of the standards.

Other ideas beyond the existing standards in the program suggested by the respondents included:

- Emergency Response for Mines;
- A document on dealing with heat stress;
- A best practice on driving in the mine;
- Non-specific training and Learning materials;
- Maintenance of equipment guidelines;
- A document on accident prevention in mines;
- User handbooks and guidelines;
- Personnel certification;
- Expansion of scope to include underground working;
- Environmental management standards; and
- Mining sector OHS Management System.

Presentations by staff have also been made to the members of CAALL-OSH and CSA's Strategic Steering Committee on Occupational Health and Safety about the current status of CSA's mining standards portfolio and the need for financial support to update these standards.

In May 2008, CSA staff made a second presentation to the CANMET meeting of the Chief Inspectors of Mines, outlining a proposal to update the portfolio with project milestones, resources required and proposed work plan.

## OPTIONS FOR WORK TO UPDATE PORTFOLIO

CSA's preliminary assessment shows that there is value in updating the existing standards and in exploring potential needs for other mining safety standards solutions. However, it is essential that the approach to standards development in this area be streamlined to achieve efficiencies and better coordination across the standards work. There is a need to complete the work in stages, focusing on priorities.

### a) Update Existing Standards

- Complete an initial project to update the Wire Rope Standard, where there is a demand and for which funding has been identified
- Start the development of a new edition of M421 - Use of Electricity in Mines

### b) Create Technical Committee on Mining

- Hold a Stakeholder strategy workshop to obtain feedback and develop a road map for the Program

- Based on feedback from Stakeholder Workshop, create an over-arching Technical Committee on Mining that incorporates the membership and work programs of the existing committees in this area. Tasks of the TC on Mining would be to develop a work plan and identify financial resources to update existing standards as required by stakeholders.
- Based on feedback from members and knowledge developed through these projects, expand CSA's presence in the mine safety field as a standards solutions provider to this sector.

The TC on Mining would identify relevant standards issues and address them through its subcommittees as appropriate. Some of these relevant standards issues might include:

Alignment with International work  
 Air quality  
 Confined Spaces  
 Deep mining  
 Environmental management  
 Ergonomics  
 Explosives  
 Working underground

Fuel Storage  
 Hoisting equipment  
 Sector OHS Management System  
 Personal Protective Equipment  
 Hazard Identification and Risk Assessment  
 Tunneling  
 Hazardous locations  
 Working in open pits

**CURRENT AND PROPOSED WORK PLAN**

**Activities for the development of a new edition of G4**

Project Stage	Activities
Stage 0	<ul style="list-style-type: none"> <li>• Business Development activities with stakeholders to gain support for approach</li> <li>• Receive CSA internal approval for development of project.</li> <li>• Hold a facilitated Stakeholder Strategy Workshop to develop a Program roadmap and assess needs and issues and produce report from workshop</li> </ul>
Stage 1	<ul style="list-style-type: none"> <li>• Re- establish committee as a Wire Rope &amp; Mine Hoisting subcommittee,</li> <li>• Invite new members,</li> <li>• Confirm interest with current members;</li> <li>• Publish notice of intent to develop new edition</li> </ul>
Stage 2	<ul style="list-style-type: none"> <li>• Develop a working draft with proposed changes to G4</li> </ul>
Stage 3	<ul style="list-style-type: none"> <li>• Convene meeting of revised committee to discuss proposed changes,</li> <li>• Identify other necessary changes,</li> <li>• Establish task forces as necessary;</li> <li>• Reach consensus with subcommittee on draft new edition</li> </ul>
Stage 4	<ul style="list-style-type: none"> <li>• Post the draft for Public Review;</li> <li>• Submit for CSA internal review;</li> <li>• Submit for pre-approval edit of draft new edition</li> </ul>
Stage 5	<ul style="list-style-type: none"> <li>• Submit draft new edition for approval ballot of content,</li> <li>• Disposition any negative comments,</li> </ul>

Project Stage	Activities
	<ul style="list-style-type: none"> <li>• Submit completed and balloted draft for internal second-level review</li> </ul>
Stage 6	<ul style="list-style-type: none"> <li>• Submit for final edit of balloted draft,</li> <li>• Publish a new edition of G4</li> </ul>

### Activities for the establishment and development of Technical Committee on Mining and Underground Work Environments (TC on Mining)

Establishment and development of the TC on Mining would be a multi-year project. The first year would see the establishment of the technical committee as follows:

Activities
<ul style="list-style-type: none"> <li>• Receive CSA internal approval for development of project.</li> <li>• Present proposal to SSC on MIES and receive approval for rationalization.</li> </ul>
<ul style="list-style-type: none"> <li>• Establish technical committee.</li> <li>• Contact all existing members of the existing technical committees.</li> <li>• Confirm interest with current members.</li> <li>• Decide on a matrix typical of the interests in the mining area (i.e. Producer Interest (Manufacturers of equipment, property developers), User – Labour, User-Management, Regulators, General Interest)</li> <li>• Invite new members to fill basic level of interest categories.</li> <li>• Develop a terms of reference with new technical committee.</li> <li>• Prepare and submit approval ballot to SSC on MIES for terms of reference for new technical committee.</li> </ul>
<ul style="list-style-type: none"> <li>• Convene meeting of Technical Committee on Safety of Working Underground.</li> <li>• Set agenda for technical committee</li> <li>• Purpose of first meeting will be to review terms of reference, confirm membership, seek new interested members, review survey results from April 2007</li> <li>• Establish task forces as necessary to review potential standards needs</li> <li>• Agree on structure of overarching technical committee with subcommittees reporting to the technical committee</li> <li>• Set future meeting dates</li> </ul>
<ul style="list-style-type: none"> <li>• Report on meeting of technical committee (minutes)</li> <li>• Follow-up on action items</li> <li>• Set agenda for future meeting of technical committee.</li> </ul>

## CSA Standards related to Mining Safety

Throughout other Standards Programs at CSA there are more than 30 Standards that are applicable to mining safety. These include standards covering: Electrical Safety, Environmental Management, Mechanical Industrial Equipment Safety, Occupational Health and Safety Machinery and Equipment, Occupational Health and Safety Personal Protective Equipment and Management Systems standards. A list of these standards is provided below.

### Electrical

- C22.1-1982 Canadian Electrical Code;
- C22.2 No. 30, Explosion-proof Enclosures Used in Class I Hazardous Locations;
- C22.2 No. 51, Armoured Cables;
- C22.2 No. 96, Portable Power Cables;
- C22.2 No. 96.1, Mine Power Feeder Cables;
- C22.2 No. 137, Electric Luminaires for Use in Hazardous Locations;
- C22.2 No. 152, Combustible Gas Detection Instruments;
- C22.2 No. 157, Intrinsically Safe Equipment and Non-Incendive Equipment for Use in Hazardous Locations;
- C22.2 No. 159, Attachment Plugs, Receptacles and Similar Wiring Devices for Use in Hazardous Locations, Class I, Groups A, B, C, and D; Class II, Group G, in Coal or Coke Dust, and in Gaseous Mines; and
- C22.2 No. 174, Cables and Cable Glands for Use in Hazardous Locations
- C68.10-08 – Shielded Power Cable for Commercial and Industrial Applications, 5-46kV

### Environmental Management

- Z768, Phase I Environmental Site Assessments;
- Z769, Phase II Environmental Site Assessments.

### Mechanical Industrial Equipment Safety

- B311, Safety Code for Manlifts.
- B167-1964 General Purpose Electric Overhead Travelling Cranes
- B376-M1980 Portable Containers for Gasoline and Other Petroleum Fuels
- B137.0–M1981 Thermoplastic Pressure Piping
- B137.3-M1981 Thermoplastic Pressure Piping
- B137.0-M1986 Thermoplastic Pressure Piping
- B137.3-M1986 PVC Pipe for Pressure Applications
- B44-1975 Elevators, Dumbwaiters, Escalators and Moving Walks (installed before Oct 15, 1991 ON)
- B44-M90 Elevators, Dumbwaiters, Escalators and Moving Walks (installed after Oct 15, 1991 and before April 23, 1999 ON)
- B44-94 Elevators, Dumbwaiters, Escalators and Moving Walks (installed after April 23, 1999 and before Oct 1, 2007 ON)
- B44-00 Elevators, Dumbwaiters, Escalators and Moving Walks (after Oct 1, 2007 ON)

**Occupational Health and Safety**

- B352.0, Roll-over Protective Structures for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines – Part 1: General Requirements;
- Z94.1, Industrial Protective Headwear – performance, selection, care and use;
- Z94.2, Hearing Protection Devices - performance, selection, care and use
- Z94.3, Eye and Face Protectors;
- Z94.4, Selection, Use, and Care of Respirators;
- Z96, High-Visibility Safety Apparel;
- Z180.1-00 Compressed Breathing Air and Systems
- Z195, Protective Footwear;
- Z259, Fall Protection (series of standards);
- Z432, Safeguarding of Machinery;
- Z460, Control of Hazardous Energy – Lockout and Other Methods;
- Z462, Workplace Electrical Safety (under development);
- Z1006, Management of Confined Space Entry (under development).

**Appendix A – Agenda for Stakeholder Forum – November 27, 2008**

<b>Time:</b>	<b>9:00 AM to 4:00 PM</b>
<b>Location:</b>	<b>Canadian Standards Association</b> 5060 Spectrum Way, Mississauga, ON
<b>8:30 – 9:00 AM</b>	<b>Registration and Continental Breakfast</b>
<b>9:00 – 9:20 AM</b>	<b>Introduction</b> Welcome from CSA & Housekeeping announcements Introductions
<b>9:20 – 9:30 AM</b>	<b>Forum Purpose and Goals – Facilitator</b>
<b>9:30 – 10:15 AM</b>	<b>Opening Presentations:</b> <ul style="list-style-type: none"><li>• Overview of Current state – CSA Mining Safety Standards</li><li>• Role of standards solutions in meeting sector needs Q&amp;A</li></ul>
<b>10:15 – 10:45 AM</b>	<b>Refreshment Break</b>
<b>10:45 – 11:45 AM</b>	<b>Workshop #1</b> This workshop will focus on CSA’s current activities and standards in mining. Participants will examine each of the 9 standards and provide their perspective on specific actions that should be taken for each of the standards
<b>11:45 - 12:15 PM</b>	<b>Reporting Back</b>
<b>12:15 – 1:15 PM</b>	<b>Lunch</b>
<b>1:30 – 2:30 PM</b>	<b>Workshop # 2</b> This workshop will focus on the broader context of CSA’s role in mine safety – using a discussion guide, participants will examine the need for voluntary standards and guidelines for mining sector, supplementary products, and what is needed to support the creation, updating and implementation of required standards.
<b>2:30 – 3:00 PM</b>	<b>Reporting Back</b>
<b>3:00 – 3:20 PM</b>	<b>Refreshment Break</b>
<b>3:20 – 4:00 PM</b>	<b>Plenary Discussion on Next Steps</b> Summary of discussions and recommendations
<b>4:00 PM</b>	<b>Closing Remarks and Adjournment</b>

## Appendix B – Revisions to CSA G4 and Content of M421

*Note: In this Appendix, is a summary of revisions being made to CSA G4 and the contents of CSA M421. Both G4 and M421 are active standards development projects. The full content of the other CSA mining standards has been attached for your review.*

### **G4, Steel Wire Rope for General Purpose and for Mine Hoisting and Mine Haulage**

G4 is new to the CSA mining program. It was moved from the Building Products program to the Mining Program in early 2008. The technical committee was revitalized with new members and meetings of the committee were held in May, August, and October. The committee is working on the development of the seventh edition of G4. A number of revisions have been made to this edition of the Standard including

1. The addition of a definition for metallic area;
2. Updating Standards References;
3. The addition of two metric grades and two inch/pound grades of wire rope;
4. The clarification of determining the grade of rope;
5. The testing of the fibre core is permitted at the yarn stage;
6. Clarification of the testing procedure for diameter of the wire rope;
7. Deletion of the rope pitch requirement;
8. Alignment of the breaking load test with ISO 10425;
9. Changes made to the Manufacturer's Certificate of Compliance; and
10. Changes made to information on the packing slip.

### **M421 – Use of Electricity of Mines**

#### **Scope**

This Standard establishes minimum requirements for electrical work and electrical equipment operating, or intended to operate, in mines and quarries.

This Standard is intended to be used in conjunction with CSA Standard C22.1, the requirements of which apply unless modified in this Standard.

#### **Contents**

##### **General**

- 3.1 Application of General Requirements
- 3.2 Miscellaneous
- 3.3 Cables
- 3.4 Installation of Equipment
- 3.5 Protection and Control
- 3.6 Grounding
- 3.7 Electric Blasting
- 3.8 Lightning Protection
- 3.9 Radio-Controlled Equipment

##### **Surface Mines and Quarries**

- 4.1 Application
- 4.2 Electrical Equipment Rooms
- 4.3 Outdoor Electrical Equipment — Fence Enclosures

- 4.4 Overhead Power Lines
- 4.5 High-Voltage Power Distribution to Movable Equipment
- 4.6 Movable Equipment
- 4.7 Mobile Electrical Equipment

#### **Underground Mines**

- 5.1 Scope
- 5.2 Wiring Methods
- 5.3 Installation of Transformers and Capacitors
- 5.4 Switchboards and Switchgear
- 5.5 Installation of Storage Batteries
- 5.6 Grounding
- 5.7 Communication Systems
- 5.8 Mine Hoists
- 5.9 Transportation
- 5.10 Trackless Mobile Electrical Equipment

#### **Underground Coal Mines**

- 6.1 Scope
- 6.2 General
- 6.3 Work on Live Equipment
- 6.4 Apparatus in Dusty Locations
- 6.5 Voltage at Coal Face
- 6.6 Main Fans
- 6.7 Opening of Enclosures of Explosion-Proof Equipment
- 6.8 Insulation Resistance
- 6.9 Wiring Methods for Non-intrinsically-safe Wiring
- 6.10 Installation of Equipment
- 6.11 Protection and Control
- 6.12 Grounding
- 6.13 Intrinsically Safe Systems — Signal Systems
- 6.14 Mine Lighting
- 6.15 Shot firing

#### **Appendices**

**A** — Ground Potential Rise and Ground-Fault Voltage

**B** — Overhead Line Clearances for Haul-Road Crossings

**C** — Mine Hoists

## Annex 3 – CSA Mining Standards Program

Slide 1

**CSA Mining Standards Program**

- Jeanne Bank
- Mike Dodd

November, 2008

Slide 2

**CSA Group**

Canadian Standards Association      OnSpec      CSA International

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Slide 3

**Who We Are - Key Facts**

- CSA is a private sector, not-for-profit, member-based organization.
- CSA was Canada's first and largest accredited Standards Development Organization.
- CSA has 9,000 members and manages 1,300 Technical Committees.
- CSA has published and maintains over 3,000 standards and related products in 54 technical areas.
- About 40% of CSA's standards are referenced in legislation.

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Slide 4

 **CSA - Products and Services**

- Standards
- Guidelines
- Specifications
- Handbooks or Toolkits
- Education and training
- Conformity Assessment
- Advisory Services

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Slide 5

 **Standards Development Philosophy**

- CSA Members Develop Standards Content
- CSA Staff Facilitates Process
  - Balanced Matrix
  - Support to Members
- Decisions are Determined by Consensus of Participating Members



Slide 6

 **Current Situation Re: CSA Mining Standards**

- Current portfolio – 9 standards (most from 80's - 90's)
- Over 30 other CSA standards related to mining operations
- Older standards reaffirmed by staff in 2007 as interim solution
- Total sales 87% from M421, use of electricity
- Patchwork of referencing in legislation
- Only 1 functioning, balanced Technical Committee

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Slide 7

 **Consultations with Stakeholders**

- 2007 Survey of Association of Chief Inspectors of Mines
  - Results presented to meeting of Chiefs, 2007
- Summary provided to CSA Advisory Council on OHS ( CAALL-OSH ) in June 2007
- Summary provided to CSA Strategic Steering Committee on OHS in November 2007
  - Action item – staff to prepare proposal for review by Exec. submitted in April '08
- Business Assessment (Jan. - Feb. '08) – research, interviews with stakeholders

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Slide 8

 **Proposed Approach**

- **Updating of existing standards to be done on a streamlined and coordinated basis, in stages**
- **First stage:**
  - Start work on G4 Wire Rope Standard
  - Initiate project to develop new edition of M421 – *Use of Electricity in Mines*
- **Second Stage:**
  - Hold a stakeholder workshop to develop a roadmap for future Program activities and products
  - Updating existing standards on a priority basis using Technical Subcommittee structures

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Slide 9

 **Scope and Benefits of Approach**

- Scope to cover mining and underground work environments, covering regulatory and sector specific strategic issues
- Efficient use of resources, based on stakeholder needs
- Sector liaison with other relevant standards activities – e.g. electrical
- Support development of new products beyond standards
- Support the establishment of new TSCs as need arises

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 **Proposed Activities & Timeline**

1. Stakeholder consultations on proposal to seek support (May – June)
2. Stakeholder strategy workshop (Fall '08)
3. Year 1:
  1. Form committee to develop new edition of G4
  2. Establish new TC on Mining (Yr. 1)
4. Year 2:
  1. establishment of TSCs as required and ongoing development of new editions – G4, M421, others to follow

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Slide 11

 **Resources/Funding**


- **CSA assignment of Project Manager to manage business development and standards work**
- **Financial support from variety of stakeholders required**
- **Ontario MOL expression of interest for G4**
- **Overall investment required for labour and expenses**
  - Year One : estimated @ \$ 48,000
  - Year Two: estimated @ \$ 47,000

Notes:


- ✓ Not including maintenance work
- ✓ Sales projections not determined (except M421)

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Slide 12

 **Outcomes**

- National approach to meet needs of regulators
- CSA standards complement existing industry standards and guidelines – value add
- Efficient use of resources
- Flexible, streamlined approach to meet new and emerging needs of sector
- Enhanced stakeholder engagement in work
- Coordination with other related standards work
- CSA maintains presence in key sector



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## Annex 4 – Mining Safety Standards

Designation and Standard Title	Scope	Referenced in Legislation or Regulations	Current Use	Known Gaps/Updating needed	What other stds, reg exist ?	Other guidance needed	Priority to be maintained	Other comments
<b>CAN/CSA-M422-M87, Fire-Performance and Antistatic Requirements for Conveyor Belting</b>	The requirements for new (unused) conveyor belting for use in any part of a mining operation that is below the surface.	QC, SK, NS, NT, NU.	In current use, particularly in planning stage as part of design.  Carleton University is doing testing for 3 months and 2 companies are looking for testing to this standard Required use in theory.  Not widely used.	hazard is gas - but same rubber compound has not changed - cover does change.	NBC flame spread standard could be used to replace some of the test requirements . The standard may be relevant for any confined space but it would be better if there was some marking on surface of product -	It has specifics but could be generic - need FAQ on types of samples to be provided. Also might be applied to grain elevators and wood chip conveyors. Need guidance on how to obtain, install, and maintain conveyors.	Yes but piggy back - TSC for M421	427 could be included as section in 421
<b>CAN/CSA-M423-M87, Fire Resistant Hydraulic Fluids</b>	Covers fire resistance, toxicity, and stability with respect to separation of water-in-oil	BC, AB, QC, NB	Used up until recently. No longer used as technically invalid.	Current new products are not being addressed. The fluids are still being used in a limited	WHMIS Other National Standards?	Need further guidance on appropriate application and safe use. Identify other maintenance	Important to update with new technology. High value in some places, but	

Designation and Standard Title	Scope	Referenced in Legislation or Regulations	Current Use	Known Gaps/Updating needed	What other stds, reg exist ?	Other guidance needed	Priority to be maintained	Other comments
	emulsions of hydraulic fluids intended for use at mines.			number of mines. Need to consider environmental factors.		values.	not in others (eg, hard rock)	
<b>CAN/CSA-M424.1-88, Flameproof Non-rail-bound Diesel-Powered Machines for Use in Gassy Underground Coal Mines</b>	Describes the technical requirements and procedures necessary for the design, performance and testing	BC, AB, QC, NS	Not referenced but is used in ON,	Gap in certification, recently transferred to Carlton U. Assume is similar to non-gassy mines. New requirements for diesel engines	Explosive atmosphere? Can we combine M424.1 and M424.2? S/b investigated. Use M421 as example for combining the 2 stds.	Not sure. Review other referenced standards in M424 series.	Yes, necessary	
<b>CAN/CSA- M424.3-M90, Braking Performance Rubber-Tired, Self – Propelled Underground Mining Machines</b>	Describes minimum performance criteria for the service braking system, secondary braking system, and parking system	AB, SK, ON (built after Oct 1, 1992 ON), NS		Surface equipment is used underground with larger mines. Cannot be used as Canadian standards	SAE standards ISO Standards	Most manufacturers are not following CSA Standard. These days, most follow international standards.	Should be adopting international or regional standards.	
<b>CAN /CSA-M424.2-M90, Non-Rail-Bound Diesel-Powered Machines for Use in Non-</b>	Describes the technical requirements and procedures	BC, AB, SK, ON, QC, NB, NT, NU	not known how well used	covered by manufacturers - may be built to higher standard - problem is old	manufacturers responsibility - but emissions now under different regs		not sure	no certification or testing - more concerned

Designation and Standard Title	Scope	Referenced in Legislation or Regulations	Current Use	Known Gaps/Updating needed	What other stds, reg exist ?	Other guidance needed	Priority to be maintained	Other comments
<b>Gassy Underground Mines</b>	necessary for the design, performance, and testing			equipment underground	- Env Canada - - this is more equipment design - much of equipment is off shore - not user focus. ISO Standards may be a solution			about changing technology - e.g. fuel cells - diesel may be phased out but other components may be relevant
<b>CAN/CSA-M427-M91, Fire-Performance and Antistatic Requirements for Ventilation Materials</b>	Specifies the fire-performance and antistatic requirements for new ventilation materials for use in underground mines.	AB	Carleton is using this for testing	not sure at this stage	no		link to 422 - one stand	Link to Z462 - Workplace Electrical Safety
<b>CAN/CSA-M430-90, Roof and Rock Bolts, and Accessories</b>	Covers the chemical, mechanical, and dimensional requirements for roof and rock bolts and accessories.	NS	ON BC?	Does not cover the length of bolts. Installed performance tests? Integrated with ground control systems? Checks for corrosion and damage?	ASTM CEN New resin standards	Selection of bolts for various applications and environments. Guidance on in-use checking and testing. Special requirements	Should be updated and broadened in scope.	Needs to be part of a series on ground control systems. (eg, mesh and shot-crete)

Designation and Standard Title	Scope	Referenced in Legislation or Regulations	Current Use	Known Gaps/Updating needed	What other stds, reg exist ?	Other guidance needed	Priority to be maintained	Other comments
						for deep mines? Higher temperature and pressure environments?		
<b>G4-00, Steel Wire Rope for General Purpose and for Mine Hoisting and Mine Haulage</b>	Covers mine hoisting, mine haulage, and ski-lift ropes, and ropes for general applications.	MB, ON, QC, NB	Yes, with MOL in rope testing lab, there is non-destructive testing, MASA has not promoted the use of G4	Non-destructive testing, Electromagnetic NDT, S/B maintained, ultra-high tensile rope to consider grade of wire and steel, behaviour of rope based on wire properties, new tech on rope and hoisting, updating s/b every 4 years	Regulations	Probably not.	Yes	Mines don't use but it is used by lab.
<b>M421-00, Use of Electricity in Mines</b>	Establishes minimum requirements for electrical work and electrical equipment operating, or intended to operate, in mines and quarries.	AB, SK, NS, YT	widely used Yes used extensively	needs new life - code language is contradictory - new technology - TC not active- link to CEC code cycle - 3 years. Reference new C6810 cable standard - specific application to	CEC, 462 includes mining operations - ref 6810 and other new stds - mine feeder cables - important to ensure ref in reg. C6810 Z462	more promotion of relevant standards to sector - 6810 - more sharing of incident data - use safety organizations to promote Follow example of	High Yes	form online workspace - link to CEC - this std includes design - need Z462 ref

Designation and Standard Title	Scope	Referenced in Legislation or Regulations	Current Use	Known Gaps/Updating needed	What other stds, reg exist ?	Other guidance needed	Priority to be maintained	Other comments
				mines. S/B updated ongoing based, ref to C6810, mine feeder cable should be combined, work closely with CEC,	Regs, C6810, CEC, Z462,	CEC (3-year) cycle. M421 stands alone, Handbook could be considered but mining is a specialized field. Look for use of Z462		
<b>Can/CSA M3450-03, Earth-Moving Machinery - Braking Systems for Rubber-Tyred Machines - Systems and Performance Requirements and Test Procedures</b>			Yes, vehicle braking systems, safe stopping, M424.2 is for older b4 2007, vehicles, new vehicles use 3450, used by inspectors	Not sure if updates are necessary, s/b reviewed on regular basis	Should consider merging 424.3 with 3450, why 2 stds? Need to address greater grades in CSA Std.	HB on derivation, and use of formulas. Explanation on testing or develop an Annex to explain use. ON regs on vehicle design. Need to address people movers as well.	Yes	

## Annex 5 – CSA Member Matrix

### Committee Structure

The membership on a committee needs to reflect the stakeholders in the sector and the development of the standard. The categories shown below are typical for a number of the committees in the CSA occupational health and safety program area, however the actual interest categories may be changed if a particular interest does not fit into one of the defined categories.

### Voting Members

#### Qualification of Members

Membership is based on the individual's broad expertise and interest in, knowledge of, and familiarity with the development, management, and application of Standards and management concepts in the area of occupational health and safety as well as specialized knowledge in the subject area of the scope of the standard being developed. The individual is expected to work within the consensus process and to meet and carry out the obligations of membership described in the terms of reference for the committee.

In addition, members are expected to speak on behalf of the organization they represent and should be available to serve for at least one three year term. Where possible, representation through an association is considered in the interest of achieving broad representation on the Committee.

#### Categories

Members represent the following categories, on the basis of their predominant interest in the products or services addressed by the standard, with consideration being given to geographical representation:

- (a) **Producer/Supplier** — this category includes those who are predominantly involved with production, promotion, retailing, or distribution of the products or services;
- (b) **Labour User** — this category includes those who represent the user interest, specifically labour, in the area of occupational health and safety;
- (c) **Employer User** — this category includes those who represent the user interest, specifically an employer, in the area of occupational health and safety;
- (d) **Regulatory Authority** — this category includes those who are predominantly involved in regulating by statute the use of the products or services; and
- (e) **General Interests** — this category includes those who are not associated with production, distribution, direct use, or regulation of the products or services. This category may include representatives of the academic, scientific, and consulting interests.

#### Matrix

The matrix of the *Committee* may be as follows:

Category	Minimum	Maximum
Producer/Supplier	4	5
Labour User	4	5
Employer User	4	5
Regulatory Authority	4	5
General Interest	4	5

**Balance**

The actual number of voting members in any one category shall be not more than the combined actual numbers of the voting members in the two smallest categories.

**Non-voting Members**

A limited number of suitably qualified individuals may be appointed as associate members if participation by such members would help the Committee carry out its responsibilities.