



Surface Mining Sector Risk Assessment

Results of the September 12, 2016 Workshop

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Risk Assessment Project

- ❑ **The Ministry launched in 2013, a project to put in place an integrated risk management methodology:**
 - To identify risks to worker health and safety and to work with employers and workers on reducing those risks
 - To provide more information to employers and to workers and their representatives about risks at the **SECTOR** level

- ❑ **Harness collective wisdom across the sector in a bipartite process to focus the industry, workers and their representatives, HSAs, and the regulator on the highest risks to health and safety**

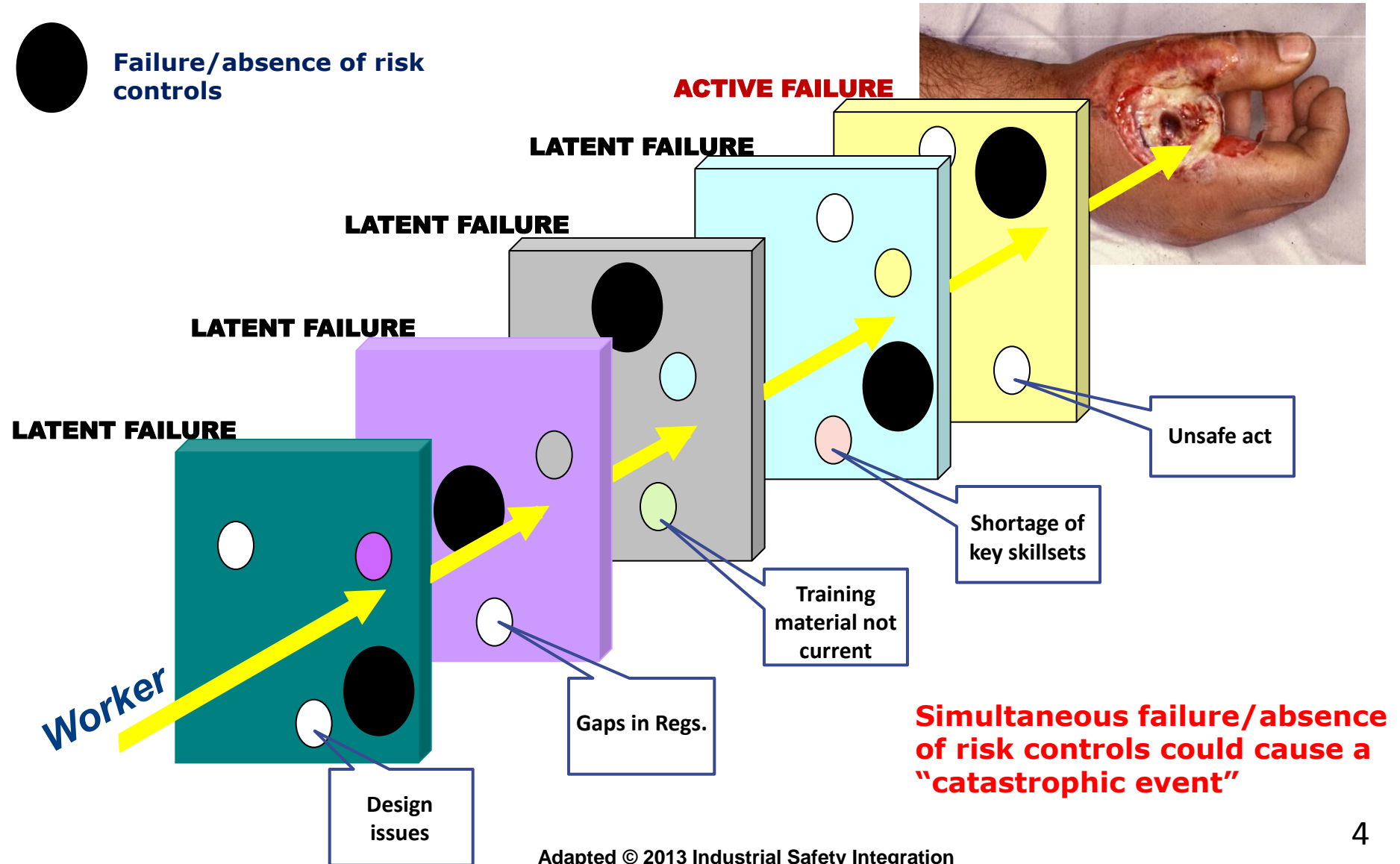
- ❑ **This approach draws on industry, worker, HSA, and ministry knowledge of risk and recognizes that one-size does not fit all**

- ❑ **The approach developed for this project draws on the empirical insights of risk management, and operations research/ decision science**

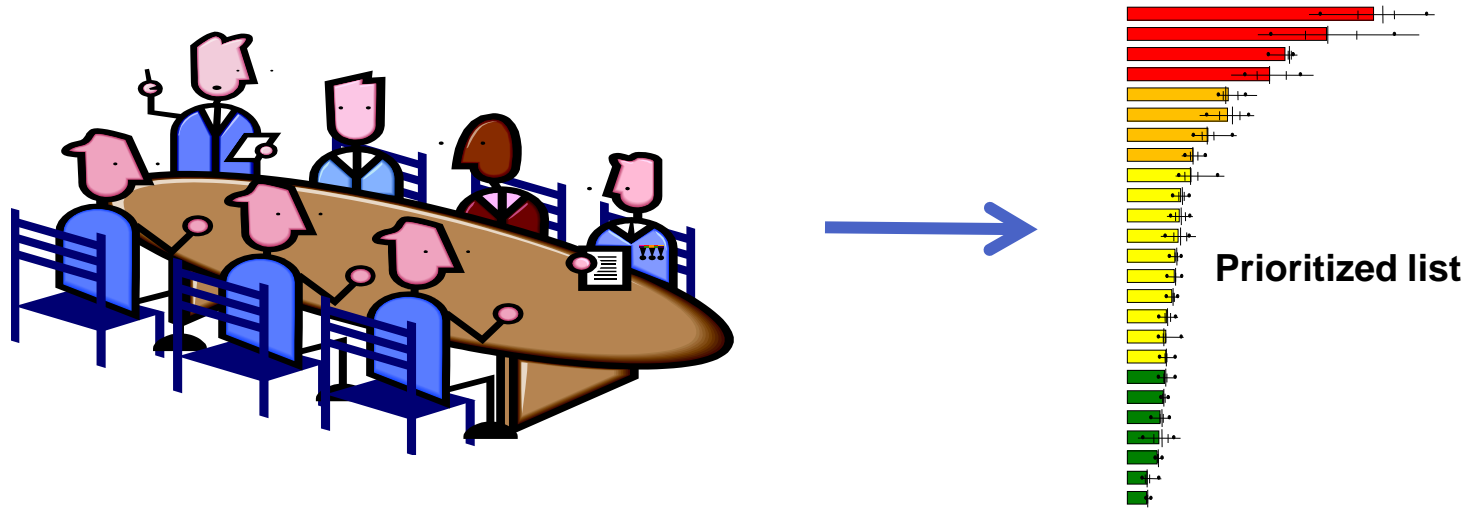
Risk Assessment Project: The Subject Of Inquiry

○ Examples that could lead to increased risk

● Failure/absence of risk controls



Risk Assessment Workshop: Process



Workshop is face-to-face. No teleconferencing.

Risk Assessment Workshop: A Bipartite & Collective Process

- ❑ **Workshop process was open, transparent, and collaborative:**
 - Ensured that any perspective or viewpoint was heard
 - Each response received was respected and not freely edited
 - Final list shared with workshop participants before the workshop

- ❑ **Finding acceptable solutions that all members can support:**
 - Only Worker and Employer participants voted, not MOL or IHSA/WSN
 - Process was NOT about consensus, although the results demonstrate a significant degree of convergence

Subject Matter Experts: Workshop

#	Name	Company/Representation
1	Matt McDonald*	James Dick Corporation
2	Dee Gollnitz*	CBM Aggregates
3	Chris Bullock*	Lafarge
4	John Scanlon*	Pioneer Construction
5	Stanley J. Young*	Boilermakers (Nelson)
6	Randy McCloskey*	UNIFOR (Walker)
7	Ken Greathead*	USW (Lafarge)
8	Don Lefebvre*	USW (Goldcorp)
9	Gerry Champagne	WSN
10	Paul Dignam	IHSA
11	Mike Scott	OSSGA

#	Name	Company/Representation
12	James Milne	MOL
13	Rick Kennedy	MOL
14	Chris Plouffe	MOL
15	Glenn Staskus	MOL
16	Bob Barclay	MOL

#	Name	Company/Representation
17	Christine Bibby	MOL (Workshop Tech Support)
18	Sujoy Dey	MOL (Workshop Facilitator)

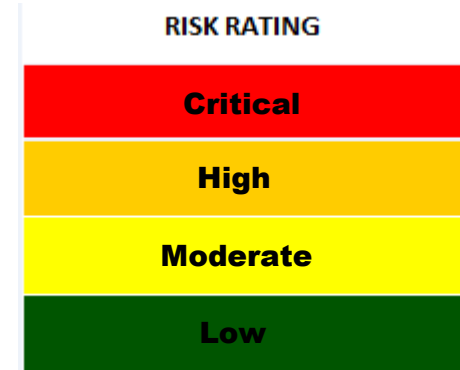
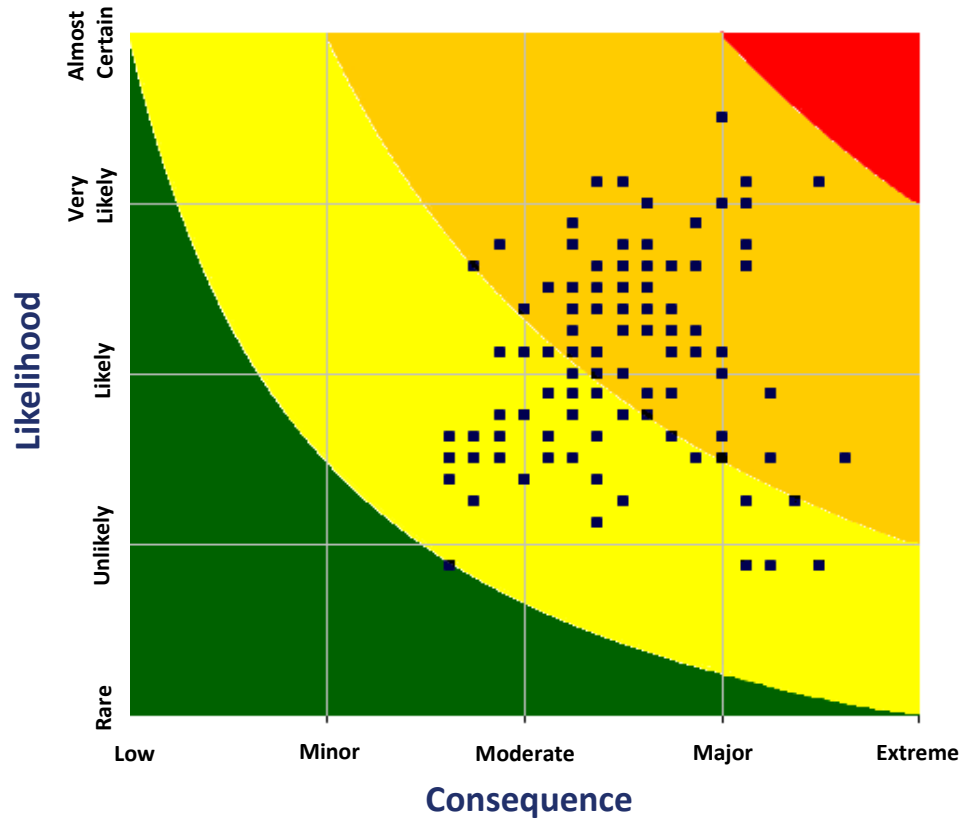
* Voting Participant

Events Initially Grouped Into 25 Categories

1. Blasting
2. Confined Spaces
3. Crushing and Screening
4. Electrical
5. Emergency Preparedness
6. Environmental
7. Falls from Heights
8. Fatigue
9. Ground Stability
10. Guarding
11. Illumination
12. IRS
13. Maintenance
14. Mine Design
15. Mobile Equipment
16. MSD
17. Mucking
18. Occupational Disease
19. Psychosocial
20. Slips, Trips and Falls
21. Stockpiles
22. Training
23. Water
24. WHIMIS
25. Working Alone

*** This list is not in any order of priority**

Surface Mining Sector: Heat Map



LIKELIHOOD	DESCRIPTION
Almost Certain [5]	Unwanted event is almost certain to happen in the next year [or 90% or greater chance of occurrence]
Very Likely [4]	High probability for unwanted event to occur in the next year [or between 50%-90% chance of occurrence]
Likely [3]	It is possible for unwanted event to occur in the next year [or between 20%-50% chance of occurrence]
Unlikely [2]	Low probability for unwanted event to occur in the next year [or between 5%-20% chance of occurrence]
Rare [1]	Very low probability for unwanted event to occur in the next year [or less than 5% chance of occurrence]

CONSEQUENCE	DESCRIPTION
Extreme [5]	Fatality or Permanent Disability [or extreme impact/importance]
Major [4]	Serious Event/ Critical Injury or Critical Illness [or major impact/importance]
Moderate [3]	Temporary Disability (Lost Time): Injury/Illness [or moderate impact/importance]
Minor [2]	First Aid Treatment (No Lost Time) [or minor impact/importance]
Low [1]	No injury or illness [or negligible impact/importance]

Top 10 Risk Categories

- Top 10 categories based on the highest ranked risk within that category

#	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?
1	Occupational Disease	Silica
2	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)
3	Slips, Trips, and Falls	Slips, trips and falls from different elevations
4	Fatigue	Fatigue (Seasonal)
5	Maintenance	Lack of maintenance of equipment (Resulting in Falls, entrapment, electrocution, fires)
6	Crushing and Screening	Freeing jammed material from crusher
7	IRS	Dysfunctional IRS
8	Electrical	Electrical Contact
9	Training	Spare supervisor not making the right decisions
10	Working Alone	Working alone

Top 10 Risks: Individual Events

☐ These are the top 10 risk events out of a total of 141 identified events

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	L		C		Risk
			L	sd-L	C	sd-C	
1	Occupational Disease	Silica	4.13	0.83	4.50	0.53	18.56
2	Occupational Disease	Excessive dust from crushing and screening operations	4.50	0.53	4.00	0.93	18.00
3	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	4.13	0.64	4.13	0.83	17.02
4	Slips, Trips and falls	Slips, trips and falls from different elevations	4.00	0.53	4.13	0.64	16.50
5	Fatigue	Fatigue (seasonal)	4.00	0.76	4.00	0.76	16.00
6	Maintenance	Lack of maintenance of equipment (resulting in Falls, entrapment, electrocution, fires)	3.75	0.71	4.13	0.64	15.47
7	Crushing and Screening	Freeing jammed material from crusher	3.88	0.64	3.88	0.83	15.02
8	IRS	Dysfunctional IRS	3.88	0.83	3.88	0.64	15.02
9	Mobile Equipment	Lack of Tire safety	3.63	0.74	4.13	0.35	14.95
10	Electrical	Electrical Contact	3.63	0.74	4.13	0.64	14.95

Worker vs. (Workshop Results) - Top 10 Comparison

Worker

Workshop Results

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Occupational Disease	Excessive dust from crushing and screening operations	23.75
2	Occupational Disease	Silica	23.75
3	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	19.13
4	Occupational Disease	Exposure to dust (resulting in respiratory issues)	18.06
5	IRS	Dysfunctional IRS	18.00
6	Training	Spare supervisor not making the right decisions	18.00
7	Fatigue	Fatigue (seasonal)	18.00
8	Electrical	Electrical Contact	18.00
9	Slips, Trips and falls	Slips, trips and falls from different elevations	17.00
10	Training	New Worker injuries	17.00

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Occupational Disease	Silica	18.56
2	Occupational Disease	Excessive dust from crushing and screening operations	18.00
3	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	17.02
4	Slips, Trips and falls	Slips, trips and falls from different elevations	16.50
5	Fatigue	Fatigue (seasonal)	16.00
6	Maintenance	Lack of maintenance of equipment (resulting in Falls, entrapment, electrocution, fires)	15.47
7	Crushing and Screening	Freeing jammed material from crusher	15.02
8	IRS	Dysfunctional IRS	15.02
9	Mobile Equipment	Lack of Tire safety	14.95
10	Electrical	Electrical Contact	14.95

Employer vs. (Workshop Results) - Top 10 Comparison

Employer

Workshop Results

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Slips, Trips and falls	Slips, trips and falls from different elevations	15.94
2	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	15.00
3	Crushing and Screening	Freeing jammed material from crusher	15.00
4	Mobile Equipment	Injury due to Haulage vehicles	14.88
5	Mobile Equipment	Poor visibility and blind spots for mobile equipment operators	14.06
6	Fatigue	Fatigue (seasonal)	14.00
7	Fatigue	Shift work causing fatigue	14.00
8	Psychosocial	Stress	14.00
9	Working Alone	Working Alone	14.00
10	Occupational Disease	Silica	14.00

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Occupational Disease	Silica	18.56
2	Occupational Disease	Excessive dust from crushing and screening operations	18.00
3	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	17.02
4	Slips, Trips and falls	Slips, trips and falls from different elevations	16.50
5	Fatigue	Fatigue (seasonal)	16.00
6	Maintenance	Lack of maintenance of equipment (resulting in Falls, entrapment, electrocution, fires)	15.47
7	Crushing and Screening	Freeing jammed material from crusher	15.02
8	IRS	Dysfunctional IRS	15.02
9	Mobile Equipment	Lack of Tire safety	14.95
10	Electrical	Electrical Contact	14.95

Worker vs. Employer- Top 10 Comparison

Worker

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Occupational Disease	Excessive dust from crushing and screening operations	23.75
2	Occupational Disease	Silica	23.75
3	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	19.13
4	Occupational Disease	Exposure to dust (resulting in respiratory issues)	18.06
5	IRS	Dysfunctional IRS	18.00
6	Training	Spare supervisor not making the right decisions	18.00
7	Fatigue	Fatigue (seasonal)	18.00
8	Electrical	Electrical Contact	18.00
9	Slips, Trips and falls	Slips, trips and falls from different elevations	17.00
10	Training	New Worker injuries	17.00

Employer

Risk Rank	Category	Situation or Condition that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Slips, Trips and falls	Slips, trips and falls from different elevations	15.94
2	Mobile Equipment	Distracted Driving (Heavy equipment, company light vehicle, personal vehicle, cell phones)	15.00
3	Crushing and Screening	Freeing jammed material from crusher	15.00
4	Mobile Equipment	Injury due to Haulage vehicles	14.88
5	Mobile Equipment	Poor visibility and blind spots for mobile equipment operators	14.06
6	Fatigue	Fatigue (seasonal)	14.00
7	Fatigue	Shift work causing fatigue	14.00
8	Psychosocial	Stress	14.00
9	Working Alone	Working Alone	14.00
10	Occupational Disease	Silica	14.00

Appendix : Ministry Contact

- For additional information or questions, please contact:
 - ✓ **Sujoy Dey, Ph.D., CRM:** sujoy.dey@ontario.ca