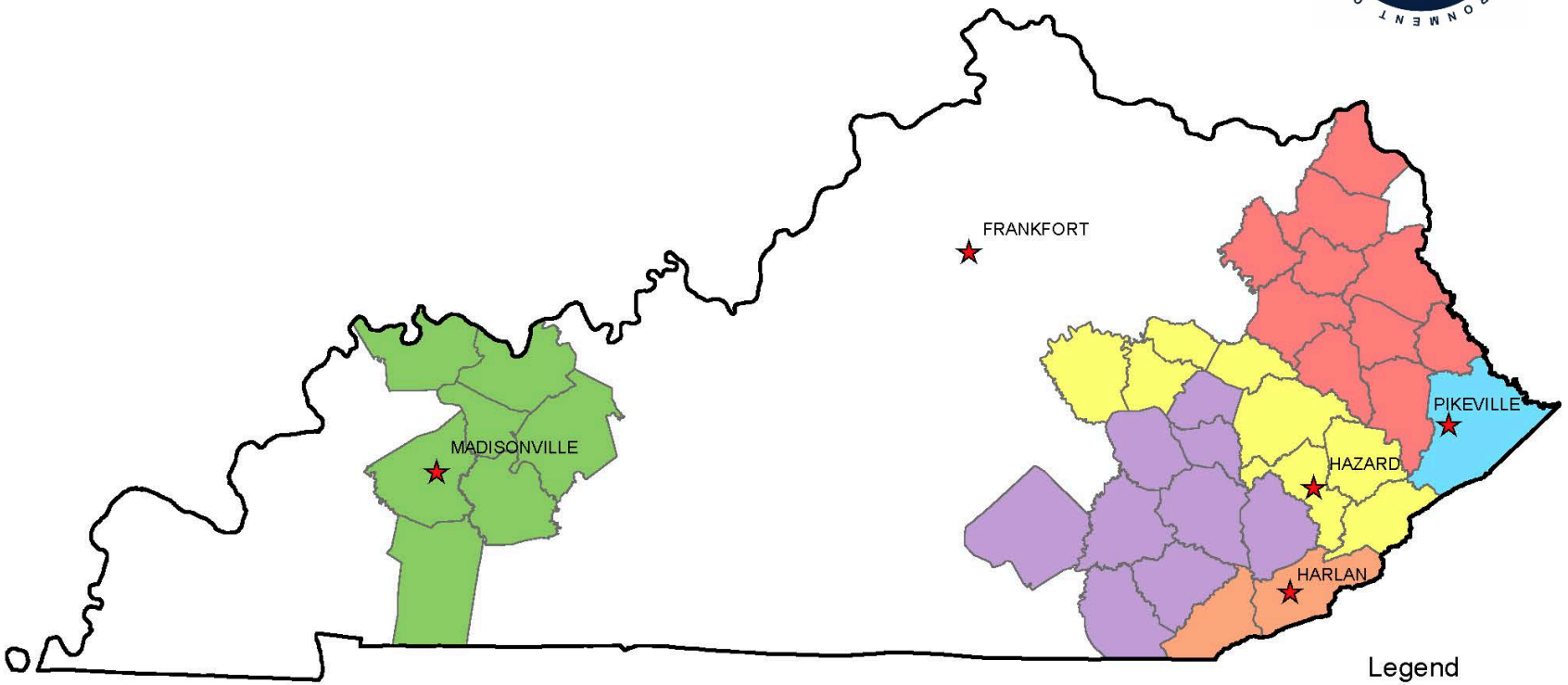
Division of Mine Safety
Energy & Environment Cabinet
PEM Presentation
September 14, 2018

Commonwealth of Kentucky

MINE SAFETY OFFICES



Staffing

- Division of Mine Safety has 57 active Mine Safety Specialists.
- Total including Administrative – 76 people.
- All Specialists are trained in Mine Rescue and provide coverage for all mines in Kentucky.
- Currently there are 188 licensed mines in Kentucky (77 UG/111 Sur). In 2008, there were 626 licensed mines in Kentucky.
- Active Mines --- 73 Surface & 54 UG = 127 Total

Some of the Functions

- Licensing
- Analyst Observations
- Inspections
- Mapping
- Mine Rescue
- Accident Investigations
- 16 separate Training Classes
- 19 Separate Certifications
- Drug and Alcohol Testing

2017 Regulatory Change HB 384

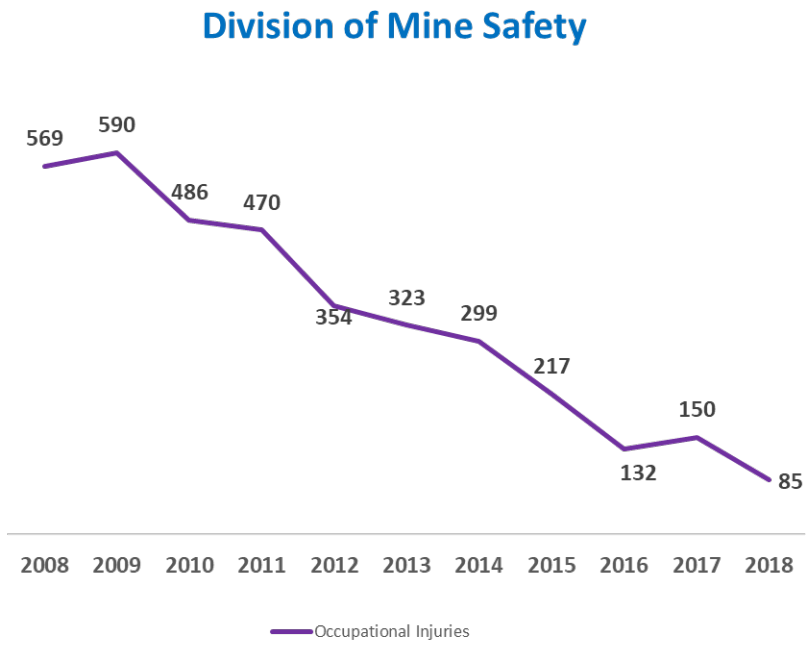
- Division of Mine Safety is required to do 6 inspections per year at underground mines.
- Change allows 3 of these inspections to be replaced with Behavioral Analyst Visits.
- Change was effective July 1st 2017.

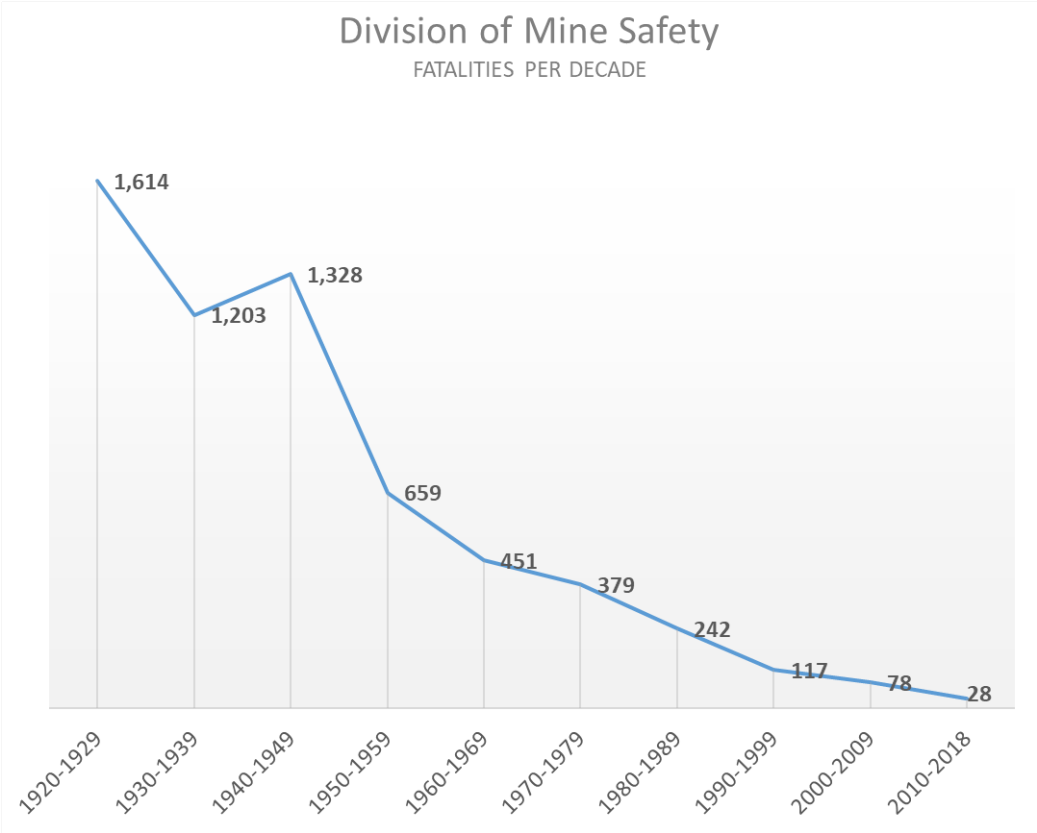
First Year of HB 384

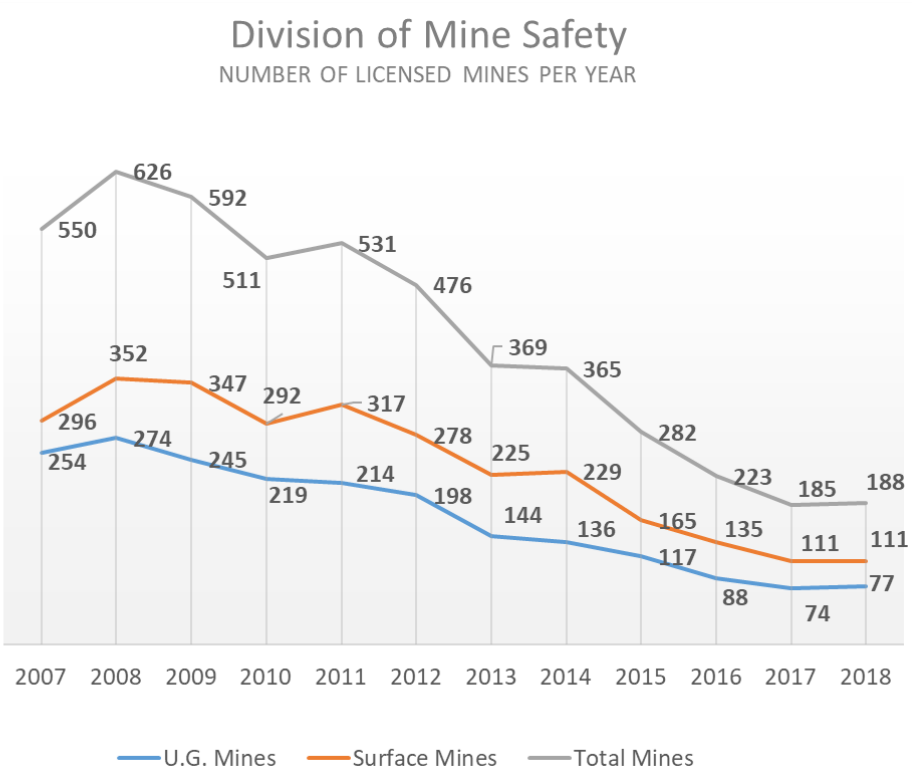
- Mine Safety Specialists performed 3,543 on the job behavior-based observations.
- This represents an increase of 260% from the previous year.
- 86% of behaviors exhibited were seen as safe.
- Valuable feedback was provided where risk was observed.
- Database completed that is capable of providing valuable information for injury prevention by sharing with miners and industry through bulletins and by request.
- Near miss reports are crucial in injury prevention.
- Miners are becoming more willing to observe their fellow workers for risk.

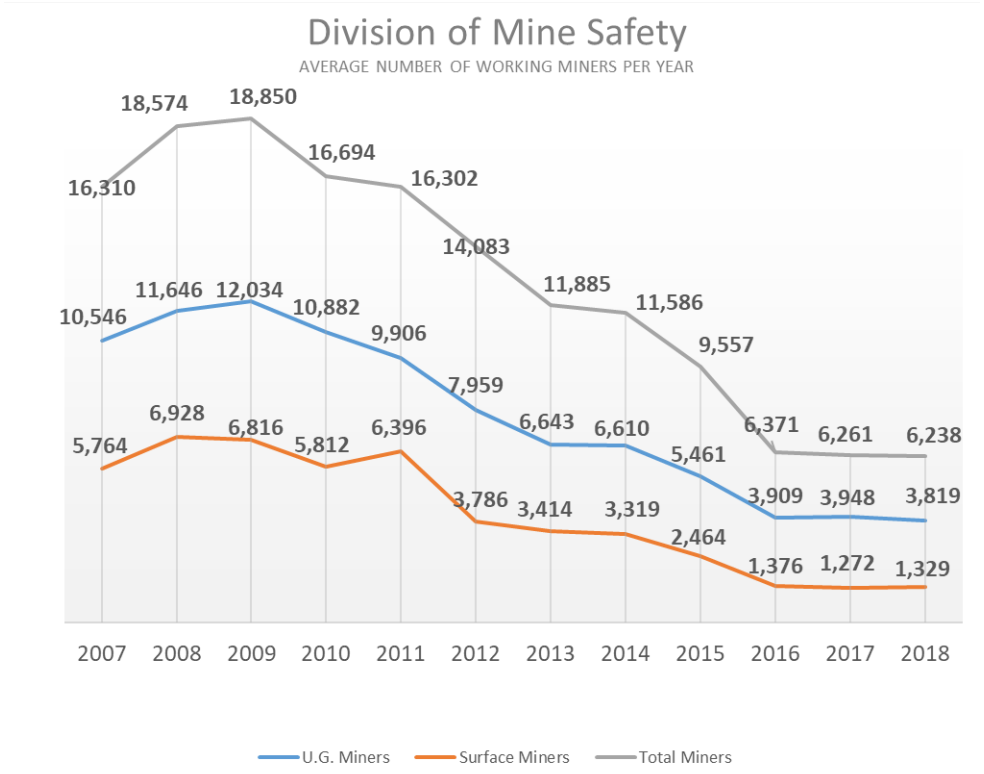
First Year of HB 384

First Year of HB 384



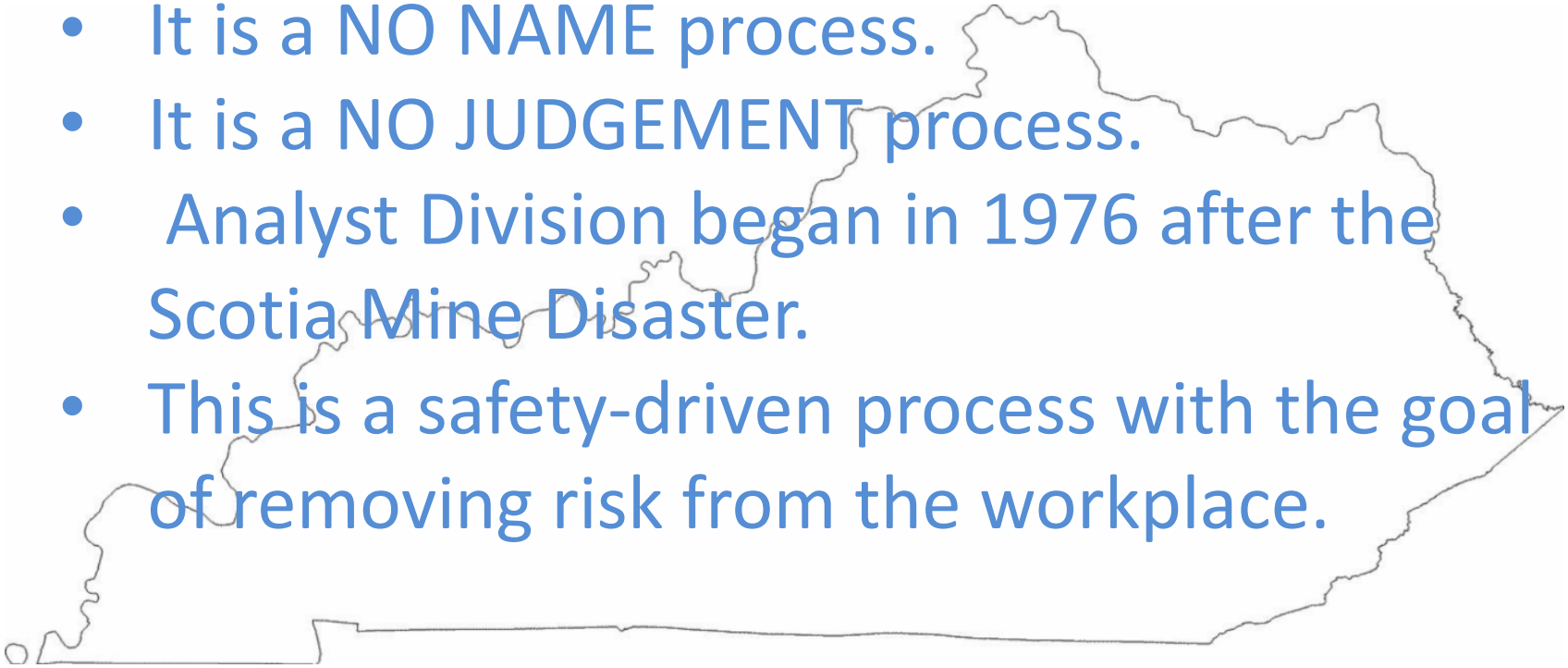

Division of Mine Safety
FATALITIES PER DECADE
1,614
1,203
1,328
659
451
379
242
117
78
28
1920-1929
1930-1939
1940-1949
1950-1959
1960-1969
1970-1979
1980-1989
1990-1999
2000-2009
2010-2018


Division of Mine Safety
NUMBER OF LICENSED MINES PER YEAR
626
592
550
531
511
476
369
365
352
347
292
317
296
282
278
274
254
245
225
229
223
219
214
198
188
185
144
165
136
135
117
111
111
88
77
74
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
U.G. Mines
Surface Mines
Total Mines


Division of Mine Safety
AVERAGE NUMBER OF WORKING MINERS PER YEAR
16,310
18,574
18,850
16,694
16,302
14,083
11,885
11,586
9,557
6,371
6,261
6,238
10,546
11,646
12,034
10,882
9,906
7,959
6,643
6,610
5,461
3,909
3,948
3,819
5,764
6,928
6,816
5,812
6,396
3,786
3,414
3,319
2,464
1,376
1,272
1,329
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
U.G. Miners
Surface Miners
Total Miners

What Is Analyst Work???

- A proactive Behavior Based “process” aimed at injury prevention
- It is a NO NAME process.
- It is a NO JUDGEMENT process.
- Analyst Division began in 1976 after the Scotia Mine Disaster.
- This is a safety-driven process with the goal of removing risk from the workplace.



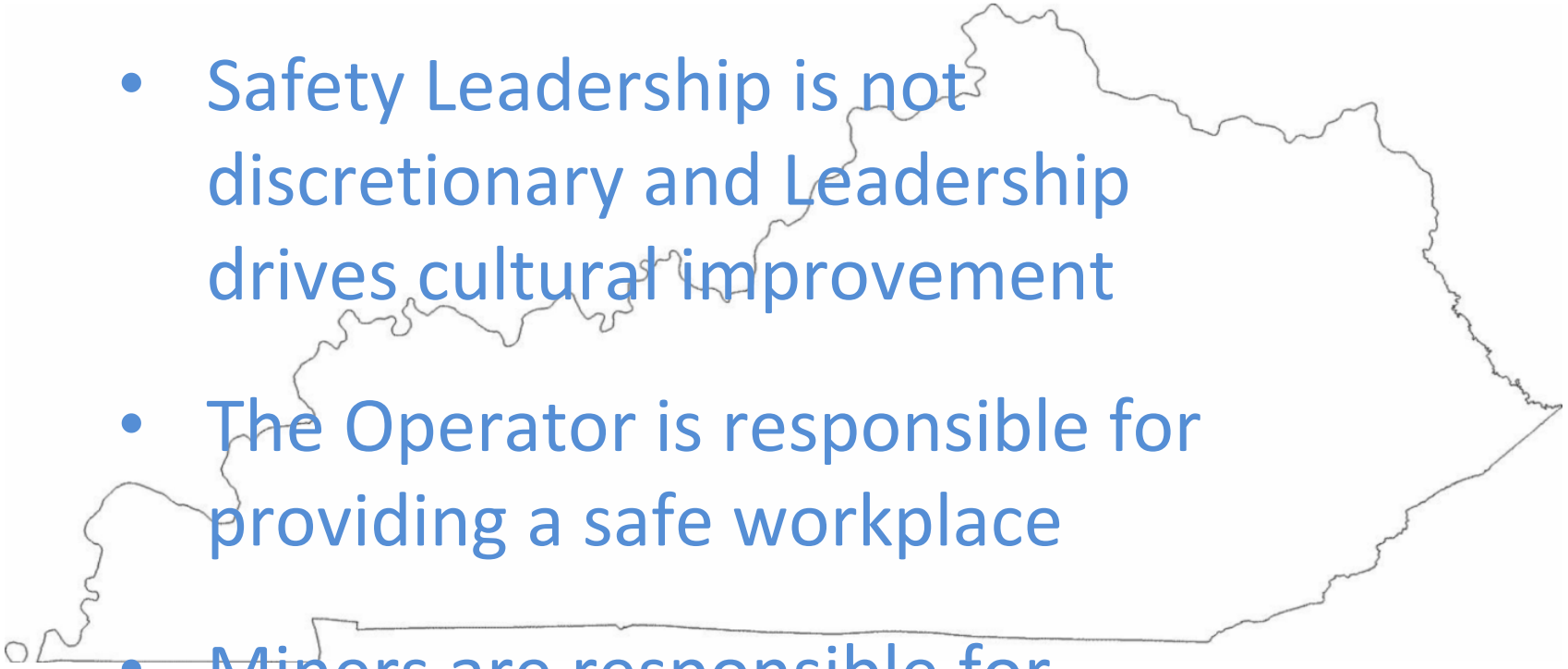
Why Analyst Work?

After more than 100 years of safety management knowledge, we know that:

- Injuries and Fatalities are most often the result of “Risk” Behavior (something that an individual did or failed to do)
- 80-85 % injuries are Behavioral
- 15-20 % Systems, Conditions & Equipment
- Regulations are mostly designed to address disasters – not injuries!!!!!

Why Analyst Work?

- Systematic control of "**risk**" offers the best opportunity to reduce injuries and fatalities
- Safety Leadership is not discretionary and Leadership drives cultural improvement
- The Operator is responsible for providing a safe workplace
- Miners are responsible for working safely



Are You Prepared for a major mine emergency????

KY Mine Incident 2018

- Ignitions behind seals
- Fire
- Explosive mixtures
- Mine Evacuated
- Water Traps emptied (Fluid blown out)(soot)
- 120 PSI seals remained intact
- Mine Rescue Teams
- Preparedness (Was the company prepared?)

Preparedness Plan

- Materials to sample remotely
- Access roads
- Water source
- Inerting capabilities (Nitrogen)
- Instruments – pumps – bag samples
- Access to Labs

Mine Emergency Risk/Readiness Self-Assessments – A Pro-Active Approach

Joseph A. Holmes Safety Association
Holmes Mine Rescue Association
June 2018
Denver, Colorado

ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

DNR CO

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Project's Specific Purpose

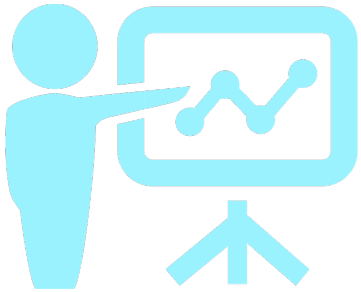
TO HELP DETERMINE:

The risks associated with your mine and methods to prevent major mine emergencies,

The preparedness of your mine to respond to a major mine emergency,

The readiness of your mine rescue teams, and

The readiness of responsible persons to execute your emergency plan.



ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

The Four Assessment Models

Risk Assessment

Preparedness Assessment

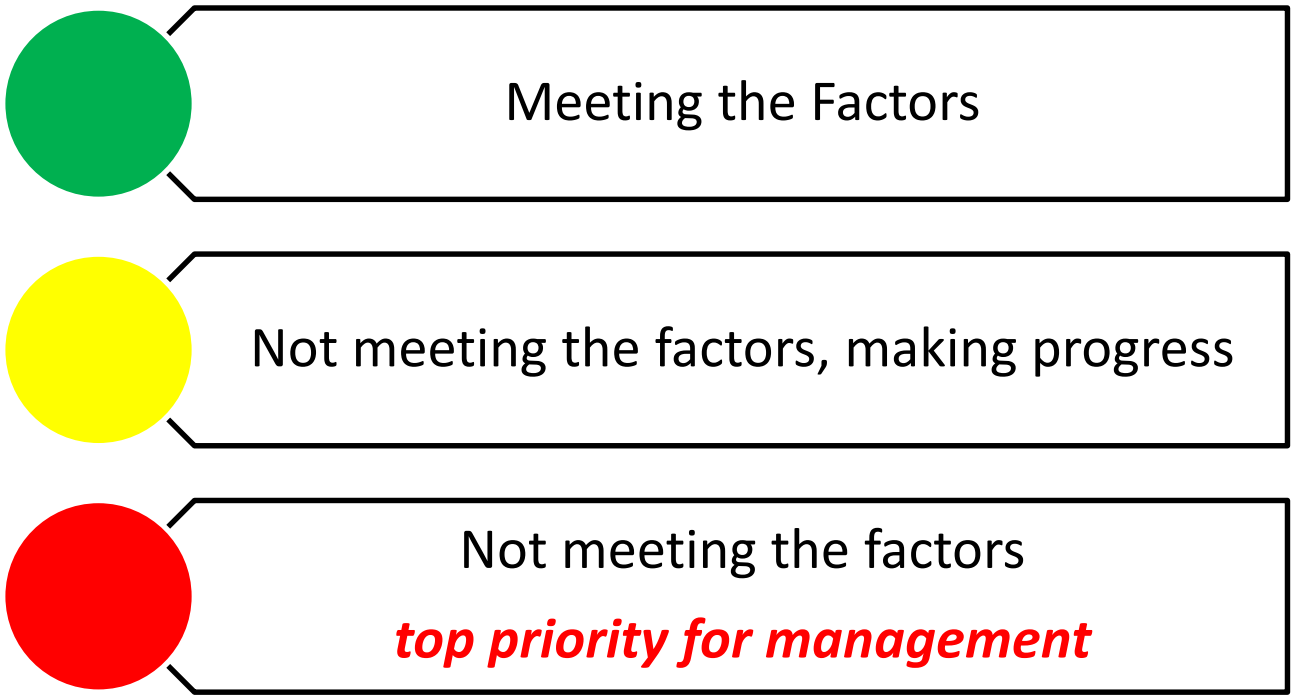
- Mine Rescue Team Readiness
- Responsible Person Readiness

ABS Group

Kentucky Energy & Environment Cabinet

Colorado Division of Reclamation, Mining and Safety
Department of Natural Resources

Assessment Criteria



ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Comparative Results – Risk Assessment

Date	5/6/2014	4/1/2015	6/24/2014	3/10/2015	10/1/2014	2/24/2015	9/1/2015	4/5/2016	11/11/2015	10/6/2015
MINE SAFETY RISK ASSESSMENT	Mine 1a	Mine 1b	Mine 2	Mine 3	Mine 4	Mine 5	Mine 6a	Mine 6b	Mine 7	Mine 8
A. Design and Planning										
B. Equipment Maintenance and Reliability										
C. Mine Infrastructure										
D. Documentation and Records										
E. Material/Parts/Equipment										
F. Hazard/Defect Identification and Analysis										
G. Procedures										
H. Workplace Conditions/Human Factors										
I. Training/Personnel Qualification										
J. Supervision										
K. Verbal and Informal Written Communication										
L. Personal Performance										
M. Equipment/Infrastructure		N/A								
N. Personnel						N/A		N/A		
O. Mining Conditions							N/A			
P. Mining Location			N/A			N/A	N/A	N/A		N/A
Q. Safety Culture										

ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Comparative Results – Emergency Preparedness

Date	5/6/2014	4/1/2015	6/24/2014	3/109/15	10/1/2014	2/24/2015	9/1/2015	4/5/2016	11/11/2015	10/6/2015
MINE EMERGENCY PREPAREDNESS	Mine 1a	Mine 1b	Mine 2	Mine 3	Mine 4	Mine 5	Mine 6a	Mine 6b	Mine 7	Mine 8
A. Local Coordination										
B. Knowledge										
C. Training and Exercises										
D. Communications										
E. Firefighting										
F. Facilities										
G. Mine Equipment										
H. Rescue Equipment										
I. Outside Suppliers										
J. Planning										

ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Comparative Results – Mine Rescue Team

Date	5/6/2014	4/1/2015	6/24/2014	3/109/15	10/1/2014	2/24/2015	9/1/2015	4/5/2016	11/12/2015	10/6/2015
MINE RESCUE TEAM READINESS	Mine 1a	Mine 1b	Mine 2	Mine 3	Mine 4	Mine 5	Mine 6a	Mine 6b	Mine 7	Mine 8
A. Competencies										
B. Training Drills and Exercises										
C. Leadership / Organization										
D. Rescue Team Equipment										
E. Mine Infrastructure Equipment										
F. Contracted Team Resources										
G. Communications										
H. Emergency Procedures										
I. Equipment Procedures										

ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Comparative Results – Responsible Persons

Date	5/6/2014	4/1/2015	6/24/2014	3/109/15	10/1/2014	2/24/2015	9/1/2015	4/5/2016	11/11/2015	10/6/2015
RESPONSIBLE PERSON READINESS	Mine 1a	Mine 1b	Mine 2	Mine 3	Mine 4	Mine 5	Mine 6a	Mine 6b	Mine 7	Mine 8
A. Competencies										
B. Training, Drills and Exercises										
C. Knowledge and Information										
D. Emergency Response Plans										
E. Responsible Person(s) Equipment										
F. Communications Procedures										
G. Emergency Procedures										

ABS Group

Kentucky Energy & Environment Cabinet

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Comments from Participants

- It is definitely a huge value to our industry
- Made us think about things that have been taken for granted
- Helped us develop a good action item list of best practices to lead continuous improvement in risk mitigation and preparedness
- Produced new understanding and insights about our preparedness to further reduce risk
- We were able to engage our team on substance with each other.
- I will share this process with our sister mines as well as our competitors locally

ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

More Feedback

- This workshop allowed for everyone's input, which was really useful.
- I like the way the final report is laid out – It prioritizes action items and takes the focus away from a final score
- Benefit: This can be used as a checklist for critical issues within the mine
- The tool and the process are easy to use – we will be able to reassess our progress later and demonstrate continuous improvement
- This workshop increased our overall self-awareness. Tremendous asset to limit risk and reduce insurance costs

ABS Group

KENTUCKY ENERGY & ENVIRONMENT CABINET

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Challenges/Opportunities???

- Agency Retirements
- New and Young miners being injected into the workforce (experience)
- Tougher Mining Conditions
- 421 requests to mine within 300’ of oil or gas wells since January 2016
- Emergency Preparedness

Questions?????