# AGENDA

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Remarks

Patricia Silvey
Deputy Assistant Secretary for Operations
SUBMIT REGULATORY REFORM IDEAS TO MSHA

- **E Mail:** zzMSHA-OSRVRegulatoryReform@dol.gov

- **Mail:** MSHA, Office of Standards, Regulations, and Variances, 201 12th Street South, Suite 4E401, Arlington, Virginia 22202-5452.

- **Hand Delivery or Courier:** 201 12th Street South, Suite 4E401, Arlington, Virginia, between 9:00 a.m. and 5:00 p.m. Monday through Friday, except Federal holidays. Sign in at the receptionist’s desk on the 4th floor East, Suite 4E401.
Trends in Recent Fatalities and Coal’s Training Assistance Initiative

Tim Watkins
Deputy Administrator for CMS&H
COAL FATALITIES 2017

• From January - May, 2017:

• 7 Fatalities
  o 3 Surface Mines
  o 3 Underground Mines
  o 1 Surface Facility
  o 4 Accidents in WV
    ❖ Of last 15 fatalities, 7 in WV (Since CY2016) (all but 1 in southern WV)
  o 2 in KY
  o 1 in Montana
On Thursday, January 26, 2017, a 42-year-old miner, with less than 1 year of experience at the mine and less than 1 year of experience at the job he was performing, was fatally injured when he contacted a moving drive roller for the section belt. The victim was positioned between the guard and the conveyor belt drive when he came in contact with the shaft of the belt drive roller.
On February 3, 2017, a 54-year-old truck driver, with less than 1 year of experience at the mine, received hip and leg fractures when he jumped from the cab of his truck as it was overturning. The victim had positioned the truck on the dump pad and began raising the bed. Material in the bed was frozen or compacted and created an uneven load. As the bed reached full extension, the truck fell over. Due to complications associated with his injuries, the victim passed away 7 days later.
On February 23, 2017, a 62-year-old section foreman, with less than 1 year of experience at the mine and less than 1 year of experience at the job he was performing, was seriously injured by falling roof rock in the No. 3 entry of the active working section. The rock fell from between roof bolts and was approximately 3 feet by 2 feet by 3 to 4 inches thick. First-aid was administered and the injured miner was transported to a medical center. Due to medical complications from the injuries he sustained, the victim died on April 6, 2017.
On February 27, 2017, a 43-year-old plant attendant, with less than 1 year of experience at the mine and less than 1 year of experience at the job he was performing, was fatally injured when he fell through a 27-inch opening in a plate press. The victim had climbed a ladder to repair a damaged plate when he fell about 19 feet onto a moving refuse belt.
On March 30, 2017, at 2:09 am, a 33-year-old miner (auger operator/foreman), with less than 1 year of experience at the mine and 1 year of experience at the job he was performing, was fatally injured at a surface auger mine. The miner was struck by a rock that fell from the bottom section of the highwall while changing worn cutter-head bits located at the front of the auger machine. The rock was approximately 4 feet by 5 feet by 30 inches in size.
On Saturday, May 6, 2017, a 62-year-old miner, with over 10 years of experience at the mine and over 10 years of experience at the job he was performing, was fatally injured when the haul truck he was operating went over the highwall and fell approximately 150 feet. The victim was dumping overburden over the highwall when the accident occurred.
On Thursday, May 18, 2017, an outby utility miner, with less than 1 year of experience at the mine and less than 1 year of experience at the job he was performing, received fatal injuries when his head hit the mine roof and/or roof support. He and another miner were travelling in a trolley-powered supply locomotive when the accident occurred. While the locomotive was still in motion, the trolley pole came off the trolley wire. The victim grabbed the trolley pole to place it back on the trolley wire. In this slightly elevated position, the victim hit his head on the mine roof and/or roof support and was fatally injured.
CAUSES & TRENDS OF FATALITIES

• Causes of Accidents
  o 4 Powered Haulage
  o 1 Slip/Fall of Person
  o 1 Fall of Face/Rib/Highwall
  o 1 Fall of Roof

• Trends in Seven Fatalities
  o In 6, miner had one year or less experience at the mine
  o In 5, miner had one year or less experience at the job
Injuries by Years of Experience at a Mine
FY 2016 Q1 - FY 2017 Q3 (data from 7000-1)
Injuries by Years of Job Experience
FY 2016 Q1 - FY 2017 Q3 (data from 7000-1)
Top 10 Occupations by Injuries for Miners with One Year or Less at the Mine
10/01/2015 - 05/17/2017 (data from 7000-1)

- General Laborer (Sur, UG, Facility) - 269
- Roof Bolter - 152
- Maintenance Man, Mechanic - 88
- Electrician - 50
- Continuous Miner Operator - 37
- Shuttle Car Operator - 32
- Foreman - 29
- Beltman, Conveyor Man - 26
- Scoop Tram Operator - 26
- Bulldozer Operator, Heavy Equipment Operator - 24
Top Occupations by Injuries - With One Year or Less at the Occupation
FY 2016 Q1 - FY 2017 Q3 (data from 7000-1)

- General Laborer (Sur, UG, Facility) - 222
- Roof Bolter - 67
- Maintenance man, Mechanic - 42
- Beltman, Conveyor Man - 35
- Bulldozer Operator, Heavy Equipment Operator - 19
- Foreman - 16
- Continuous Miner Operator - 13
- Scoop car/Scooptram operator - 12
- Longwall/Plow operator - 11
- Shuttle Car Operator - 11
- Mine Examiner - 11
GOALS OF TRAINING ASSISTANCE INITIATIVE

• CAP/EFSMS personnel talk to & observe work practices of miners with less experience at the mine or on the job.
  o For miners with one year or less experience at mine, evaluate new or experienced miner training
  o For miners with one or less year experience at job, evaluate task training
• Identify deficiencies and offer suggestions in training
• Work with operator to improve training programs
TRAINING ASSISTANCE INITIATIVE

TIMELINE

• During week of **June 12**, MSHA Coal Districts will reach out to operators to explain the details of the initiative, ask if they are interested in participating and for a list of miners who:
  o Were hired in the last 12 months
  o Have been in their current job activity for 12 months or less
  o The list should include miners’ shifts and job activities

• **We encourage operators to assist us by providing these lists in a timely manner**
TRAINING ASSISTANCE INITIATIVE

TIMELINE

• On June 19, site visits will begin
• Initiative will continue through September 30, unless it is necessary to extend it
• The Districts will also be requesting operators to allow miners with greater experience to travel with MSHA to visit less experienced miners
• This training assistance initiative - a compliance assistance effort by MSHA - will be conducted by CAP/EFSMS personnel
Questions and Answers
Upstream Construction of Coal Impoundments

Stan Michalek, Division Chief
Eric Gottheld, Senior Civil Engineer
Mine Waste and Geotechnical Engineering Division

Pittsburgh Technical Support
OBJECTIVES

• Provide awareness of potential safety issues during pushout construction
• Discuss observations and experiences at pushout construction
• Identify various pushout categories and discuss plan requirements
• Solicit feedback
PUSHOUTS FOR UPSTREAM RAISE

I. Pushout
II. Fill to Existing Crest
III. Raise the Crest
PUSHOUT FAILURE
PUSHOUT FAILURE
FAILURE OF UPSTREAM RAISE
FAILURE OF UPSTREAM RAISE
ISSUES CONTRIBUTING TO PUSHOUT FAILURE

• Lack of an extensive FCR delta upstream of the embankment.

• Not minimizing free water.

• Low to extremely low undrained strength of FCR.

• Low permeability and slow dissipation of excess pore pressures, which slow strength gains.

• Higher rate of construction (load increases faster than strength).

• Potential undrained strength in “Mixed Zone.”
RECENT CHANGES TO FCR BEACH
(UNFAVORABLE TO UPSTREAM CONSTRUCTION)

• Less sand-sized particles in the FCR.
• The presence of dewatered deltas have decreased.
• Coal refuse production and construction rates have increased.
• These issues are amplified for saddle dams and side-hill embankments.
“OLDER” FINE COAL REFUSE

Two samples from same (older) impoundment:

USCS Classification SM
(Near discharge point?)

100%

70% Sand
23% Silt
7% Clay

USCS Classification ML-CL
(Back of impoundment?)

15% Sand
47% Silt
38% Clay

Source: Huang, Li & Weeratunga (April 1987) “Strength and Consolidation Characteristics Of Fine Coal Refuse” Univ. of KY Dept. of Civil Engineering
“NEWER" FINE COAL REFUSE

Coal washing process has become more effective at removing almost all sand and non-plastic fines from FCR

Can no longer expect to obtain a sandy or non-plastic “beach” near the discharge point

9% Sand

USCS “CL”
FINE COAL REFUSE – SADDLE DIKE AREA

< 1% Sand

99% Silt & Clay

$D_{15} \ll 0.001\text{mm}$

USCS “CL”

$PI = 25$
DIFFERENT TYPES OF FCR BEACH
(FROM BEST TO WORST CONDITION)

1. Traditional Full Support.
2. Adequate Support.
3. Low Support.
4. Insufficient Support.
TRADITIONAL FCR BEACH

- Is predominately sand-sized material.
- Emerges well above the pool, drains, and dries.
- Has relatively good field strength.
- Supports light loads.
- Altogether these conditions provide a relatively good foundation for the pushout.
Settled Dewatered FCR can be strong enough to walk on
Support light loads
SUPPORT PUSHOUT CONSTRUCTION
PUSHOUTS WITH ADEQUATE SUPPORT

• Pushouts where the CCR sink-in is limited and exhibit “adequate” support,

• The FCR should be consolidated under its self-weight,

• Zero strength only near the surface, and

• Exhibit normal undrained strength gain with depth.
PUSHOUT – SINK-IN OF CCR, DISPLACEMENT AND HEAVING OF FCR
PUSHOUT - SINK-IN OF CCR, DISPLACEMENT AND HEAVING OF FCR
PUSHOUTS WITH LOW SUPPORT

• FCR may have zero strength near the surface or to a shallow depth (self leveling), and

• Exhibits low strength gain with depth.

• Results in a significant amount of FCR displacement and CCR sink in.

• Increased potential for failures.
PUSHOUT – WEAK FCR DELTA
PUSHOUT – WEAK FCR DELTA
PUSHOUTS WITH INSUFFICIENT SUPPORT

• Pushouts into Deep Water or FCR with Very Low to No Strength Gain at a Significant Depth.
• Results in substantial FCR displacement and deep CCR sink in.
• Potential for large sudden failures.
PLAN REQUIREMENTS FOR PUSHOUT CONSTRUCTION

• Traditional FCR Beach (2’ above pool)
  ▪ No field testing
  ▪ Follow existing guidelines

• Non-traditional
  ▪ Field testing of FCR before pushout
  ▪ Engineering analyses
  ▪ Additional engineering controls
  ▪ Administrative controls
POTENTIAL ENGINEERING AND ADMINISTRATIVE CONTROLS

- Reduce the load by minimizing the height of the working surface above the pool.
- Reduce the distance advanced into the pool each day to allow for strength gain.
- Site improvements.
- Unmanned equipment for pushout construction.
- No upstream construction.
Questions and Answers
Remarks

Kevin Stricklin
Administrator for CMS&H
Closing Remarks

Tim Watkins
Deputy Administrator for CMS&H