
From: Jurgen Brune <jbrune@mines.edu>
Sent: Monday, May 04, 2015 12:24 PM
To: zzMSHA-Standards - Comments to Fed Reg Group **MAY 04 2015**
Cc: Karl Zipf; jgrubb; Gregory Bogin
Subject: MSHA Docket Number MSHA-2014-0029; RIN 1219-AB85_Explosion Hazards from Bleeder Ventilated Gobs _ Jurgen Brune
Attachments: TRR_376_390_FINAL.pdf; Brune2015_NAMVS_A Critical Look at Longwall Bleeder Ventilation3_SL_edits.pdf

MSHA:

Please find attached two research papers documenting the explosion hazards in bleeder ventilated coal mine gobs. Research conducted at the Colorado School of Mines has determined that zones with explosive concentrations of methane mixed with air will form in all longwall gobs. A number of mine explosions, some of them detailed in the attached publications, have been linked to such explosive gas zones (EGZs). This includes the devastating Upper Big Branch mine explosion in 2010 that killed 29 miners.

The first paper, "Methane-air explosion hazard within coal mine gobs", by Jürgen Brune, was published in SME Transactions, 2013, p. 376 - 390

This paper details the presence of EGZs in longwall gobs and illustrates the hazards resulting from EGZ explosions, reviewing a number of mine explosions and fires that resulted in fatal and serious injuries.

The second paper, "A Critical Look at Longwall Bleeder Ventilation", by Brune et al., has been submitted to and will be presented at the 15th North American Mine Ventilation Symposium in Blacksburg, VA, June 20 to 24, 2015. This paper characterizes the explosion and fire hazards stemming from bleeder ventilated gobs and suggests improvements for ventilation practices that reduce or eliminate these hazards, including progressive sealing and nitrogen injection.

Current research at the Colorado School of Mines focuses on two aspects related to these EGZs:

- A. How far will an explosion flame travel if the EGZ ignites, and will the flame, heat and concussion be able to travel to the longwall face or into other active areas of the mine where miners and equipment are at risk, and
- B. How will sudden changes in barometric pressure affect the location of EGZs and the explosion and fire hazards resulting from their presence?

These research findings strongly suggest that the concept of bleeder ventilation for longwall gobs must be thoroughly examined. Bleeder ventilation bears explosion and fire hazards that are not found in progressively sealed gobs. Progressive sealing is practiced in most mining countries, including Europe and Australia.

If you have any questions, please feel free to contact me.

Thank you for your consideration

Respectfully Submitted,

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