

# Pillar Collapses in Underground Limestone Mines



**William J. Gray, Chief  
Roof Control Division  
Mine Safety & Health Administration,  
Directorate of Technical Support  
Pittsburgh Safety and Health Technology Center  
Pittsburgh, PA  
Gray.William@dol.gov  
412.386.6301**



# August 2021 Pillar Collapse



Airblast

Surface Sinkhole



# Additional Pillar Collapse Events: October and November 2020, July 2021



PA Limestone Mine: Newly Benched Area  
(October 2020)



PA Limestone Mine: Legacy Area  
(November 2020, July 2021)



# Hazards to Miners

## -Ground Fall

Total collapse of the overburden

Rock falls from the roof and ribs

Ejection of rock from collapse area into travelways

## -Airblast

Miners in the pathways at risk from high velocity air





# Airblast Hazards



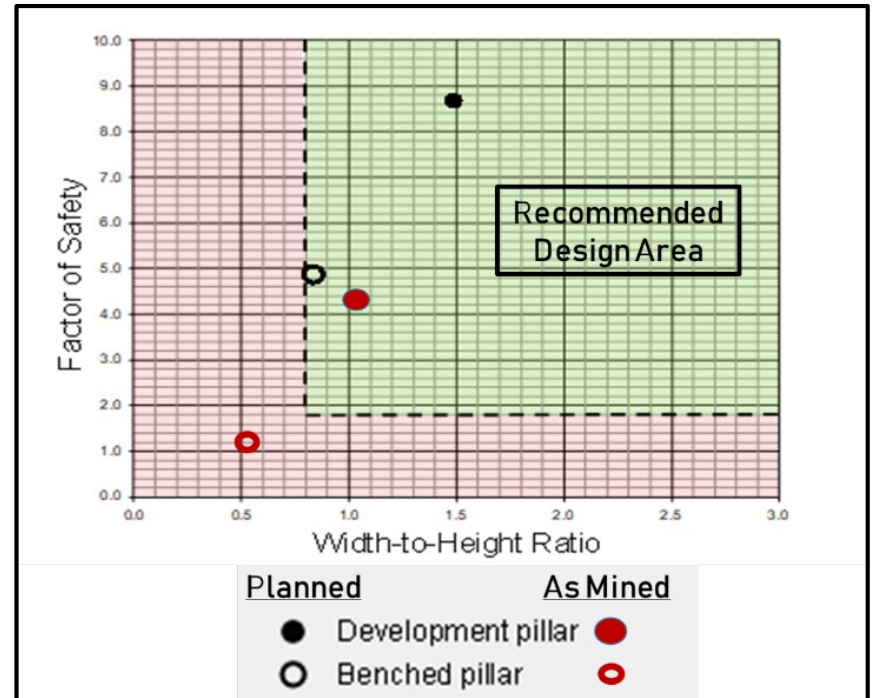
Miners may be exposed in or near:

Haul roads and travel roads.



Crushers, shops, explosive magazines, and other underground infrastructure.





NIOSH S-Pillar Program

Common aspect of all recent collapse events— tall, slender pillars



# Assessment of “legacy” areas



- Evaluate the likelihood of collapse
- Evaluate the consequence of a collapse

