

ATTACHMENT 1

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Good morning Mr. Chairman and other distinguished Members of the Committee. My name is Jeffery Kohler, and I am Professor and Chair of Mining Engineering at Penn State University. I am pleased to be here today to provide a forward-looking perspective on mine safety based on my experience of more than forty years in mining, working in academia, government, and industry.

The global economy continues to be powered by mining and mined products – examples include energy sources like coal, construction materials that utilize iron, copper, or aggregates, the rare earth minerals, pharmaceuticals, agricultural produce, and thousands of everyday items that depend on mined products. The associated mining and processing operations are a significant driver for the economies of the producer countries – 15% of the U.S. and 25% of global economy for example. Fundamental economic value and wealth are created in the transformation of materials from the Earth's crust, and the welfare of the men and women who make this possible must be of the highest concern.

Remarkable gains in mine safety have been made over the years, but more remains to be done. The goal must be to eliminate fatalities and further reduce injuries. Indeed, many mining companies have committed to the goal of zero harm, and are to be commended for taking actions to achieve the goal. If we are to be successful on this journey to zero harm across all commodities and at all mines, what steps should be taken?

We need to dispel the belief that compliance with regulations is sufficient to prevent adverse safety outcomes. Regulations provide an important base to define minimum performance, but regulatory interventions alone won't do it. Engineering interventions, such as new technologies and design practices will contribute to improve safety, but alone will not take us to the goal. Training, the third intervention of a triad that has characterized the long-standing approach to improving mine safety also will contribute to incremental gains in safety. But, as with the other two intervention approaches, it has limitations.

Instead, we should recognize that safety performance is the result of a complex system of organizational, managerial, labor, and technical components, and we must manage it accordingly and involve people from every part of the mining enterprise. A framework for this is commonly known as a Health and Safety Management System (HSMS), and such systems have been put into practice in other industries and countries. The National Mining Association has led the development of a comprehensive HSMS for mining, known as CORESafety; and has developed materials to expedite implementation. Already companies in the coal, metal/nonmetal, and stone/sand/gravel sectors have embraced CORESafety and its principles.

The journey to zero harm, with this approach at its core, will not happen overnight, and it will not be without its challenges. However, in my view, this approach represents a "game-changer" that will enable a change in the safety culture and facilitate attainment of the goal, much as has happened elsewhere.

The in-place regulatory interventions will remain important, as will the enforcement of those regulations by a well-trained and equipped inspectorate. Training interventions for everyone involved in mining will be as important as ever, but to be effective, we must bring our training practices and requirements into the 21st century. As a start, the findings of a recent National Academies study on improving self-escape for mineworkers offers important insights to improve the effectiveness of training in general.

The MINER Act brought new technologies into the mine, such as the communications and tracking systems in use throughout the coal industry and the long awaited improvements in oxygen supply. The principles of human systems integration will allow future engineering interventions to be even more successful. Occasionally, despite the best efforts of manufacturers, government, and industry, a technology falls short. Such is the case with mobile refuge

chambers. Miners and mine operators have no confidence that these units can be deployed and utilized to save lives during an emergency. Rather than continue the facade, we should move forward with a known and workable alternative – the in-place shelter. While not perfect, nor universally applicable, it represents a superior alternative for a majority of miners.

Finally, I'd like to underscore the importance of mining to this Nation and the importance of mineworker safety to mining. Also, I would note that research and the research products from the great mining schools in this country will help this vital industry to remain competitive and to achieve its goal of zero harm.

Thank you.