Mine Safety Stats and Facts

DID YOU KNOW?

There were 24 mining fatalities in the U.S. in 2019, the U.S. Department of Labor's Mine Safety and Health Administration (MSHA) reports. This is the fewest annual fatalities ever recorded, and only the fifth year in MSHA's 43-year history that mining fatalities were below 30. MSHA is still reviewing two cases of possible chargeable fatalities which, if added would make the total in 2019 the second lowest number of fatalities ever recorded.

There were four deaths each in Kentucky and West Virginia; two each in Pennsylvania, Tennessee and Texas; and one each in Georgia, Idaho, Illinois, Louisiana, Minnesota, Mississippi, New Mexico, Oklahoma, South Carolina, and Vermont.

The low number of mining deaths last year demonstrates that mine operators have become more proactive in eliminating safety hazards. But I believe we can do even better," said Assistant Secretary for Mine Safety and Health David G. Zatezalo. "A disproportionate number of mining deaths involved contractors, and we saw an uptick in electrocution accidents, with three deaths and another two close calls. In response, the Mine Safety and Health Administration launched a targeted compliance assistance effort, visiting thousands of mines to educate miners, operators and contractors on procedures that could prevent accidents like these."

After a two-year increase in 2017 and 2018, when about half of all deaths resulted from vehicle-on-vehicle collisions, failure to use a functioning seat belt and conveyor belt accidents, MSHA responded with a multifaceted education campaign and initiated rulemaking. In 2019, the percentage of deaths caused by powered haulage accidents dropped to approximately 25% of all mining deaths.

MSHA collected 147,500 samples from coal and metal/nonmetal mines in 2019, a record high. The data revealed an all-time low for average concentrations of respirable dust and respirable quartz in underground coal mines, and the exposure to dust and quartz for miners at the highest risk of overexposure hit all-time lows as well. Metal/nonmetal mines achieved the second lowest average respirable dust and quartz concentrations since 2009. Metal/nonmetal mines also achieved the second lowest average elemental carbon concentration and average total concentration since 2009.

Mining safety in the US has improved dramatically over the last century.

The ratio of worker fatalities to the total number of miners was 0.00225, it is a figure that remains orders of magnitude greater than the 0.00008 ratio recorded in 2018, when 27 miners died from a workforce of 331,389.

Improvements in safety procedures and regulation, technological developments, and the steady decline of the US coal industry and shrinking of its workforce have all contributed to a decline in operational fatalities that culminated in 2016, when 25 US miners died at work. However, with over 400 fatalities in the period between 2008 and 2018, and consistently high fatalities relating to particular machines, such as powered haulage devices, work remains to be done.

Long-term and short-term improvements to US mine safety

2018 saw fewer deaths in coal operations than 2017, with fatalities falling marginally from 15 to 12. The MSHA divides accidents into 19 categories based on the machinery, equipment and circumstances that lead to the deaths or injuries, and the administration reported one death each in relation to the fall of material, the fall of roof and the slipping of persons in 2017.

There were no deaths in these categories in 2018, and powered haulage, the category responsible for the most deaths in six of

the last 11 years in coal mines, saw two fewer deaths in 2018 than 2017.

Developments in technology, particularly tracking devices which can monitor the relative positions of workers and hazardous equipment, are a key reason for this improvement, as workers can be automatically warned about and prevented from entering dangerous areas. Further improvements in communication, enabling workers to communicate wirelessly with surface operators while underground, have also contributed to this trend, as safety officials can be involved in monitoring workers' positions and safety, reducing the pressure on individual miners to account for their wellbeing at all times.

West Virginia and Kentucky, however, saw a much higher concentration of deaths in the coal sector, with 89 and 43 fatal accidents respectively. These states' large coal mining populations are a key contributor to this statistic. The National Mining Association (NMA) reported that in 2017, 13,222 people were employed in coal mining alone in West Virginia, and a further 6,597 in Kentucky, making them the two states with the largest number of coal miners. Miners in these two states accounted for 37% of the US coal mining population of 53,051 in 2017.

However, West Virginia and Kentucky accounted for two-thirds of all coal fatalities between 2008 and 2018, around double what could be expected considering their proportion of the US coal mining population. The NMA named them as the highest and fifth-highest producers of coal in 2018, generating 95m and 39m short tonnes respectively, and the demand to produce large quantities of coal on a consistent basis could have encouraged mines to prioritize output over complete safety compliance.

Approximately 250,000 miners work in around 12,000 metal/nonmetal mines in the U.S., while approximately 83,000 work in around 1,000 coal mines. In 2019, MSHA conducted 37,471 inspections at nearly 13,000 mines employing 330,000 miners, which resulted in 99,663 citations and orders. MSHA inspected all underground mines at least four times in 2019, and it inspected surface mines and facilities at least twice, as required by law.