

Deadly form of black lung disease found to be increasing among U.S. coal miners

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Progressive massive fibrosis (PMF), the most debilitating and deadly form of black lung disease, is increasing among U.S. coal miners despite the implementation of dust controls decades ago, according to new research presented at the *ATS 2018 International Conference*.

Researchers analyzed U.S. Department of Labor data collected from former coal miners applying for benefits under the Federal Black Lung Program since the program began in 1970 until 2016. The start of the program coincides with the adoption of modern dust control measures in mines.

Over those 46 years, 4,679 coal miners were determined to have PMF. Half of those cases come from miners applying for benefits since 2000.

Kirsten S. AlMBERG, PhD, lead author and assistant professor at the University of Illinois at Chicago said the study findings “were not completely surprising”. The National Institute of Occupational Safety and Health (NIOSH) published surveillance data of active coal miners in 2014 that showed an increase in PMF after reaching a low around 2000. She added that black lung clinics nationally were also reporting increased numbers of cases.

“We were, however, surprised by the magnitude of the problem and are astounded by the fact that this disease appears to be resurging despite modern dust control regulations,” Dr.

Almberg said. "This is history going in the wrong direction."

The study found that most of the miners with PMF last worked in mines in West Virginia (28.4 percent), Kentucky (20.2 percent), Pennsylvania (20 percent) and Virginia (15.3 percent). West Virginia, Kentucky and Virginia also experienced the largest increases, from 9 to 12 percent, in PMF diagnoses over the past four decades. During that time period, Tennessee reported a 10 percent increase in claims; a trend that had not been recognized in previous studies.

Dr. Almberg said that several theories have been proposed to explain the resurgent PMF epidemic. The miners affected appear to be working in smaller operations that may have invested less in dust reduction systems. Mines operational today likely produce higher levels of crystalline silica, which is more damaging to the lungs than coal dust, during coal extraction. And miners appear to be working longer hours and more days per week, leaving less time for their lungs to clear the dust that has been inhaled.

Black lung disease, medically known as coal workers' pneumoconiosis, literally turns a person's lung from pink to black. In the early stages, the disease may go unnoticed. NIOSH's Coal Workers' Health Surveillance Program offers periodic chest X-rays to increase early detection, but not all miners participate. If the disease progresses to PMF, nodules may form in the lungs, along with a type of emphysema and fibrosis, or lung scarring. Together, these conditions lead to airway obstruction, shortness of breath and often premature death.

According to Dr. Almberg, miners who have worked 10 or more years in a mine are at greater risk for developing black lung disease and PMF. "In general, the higher concentration of dust, the more days worked per week, and the more years worked, the greater the risk," she said. "It's a classic dose-response relationship."

Study limitations include the fact that filing for black lung health benefits is voluntary and the proportion of eligible coal miners who do file is unknown.

The authors said that new, recently enacted Mine Safety and Administration dust regulations should help reduce dust exposure in U.S. coal mines. They added that coal mine operators and coal miners should continually be educated about the harmful effects of coal mine dust exposure. And the advent of continuous personal dust monitors may provide an opportunity for miners to participate in real-time monitoring and reduce excessive exposures proactively.□