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**MSHA's Occupational Illness and Injury  
Prevention Program  
Health Idea  
"Knee Pad Protection System"**

**SAFETY  
IS A  
VALUE!**

**Category : Personal Protective Equipment**  
**Mine Type: All Mines**

A southwestern Pennsylvania coal company committed to reduce the incidence and severity of knee injuries in their low-seam mines. The company successfully reduced both the occurrence of knee injuries and the knee medical incident rate by employing a "knee pad protection system." The mining company desires to share the following information with other low seam miners.



Their miners are on hands and knees in the low coal height (34" to 36") as much as 9 to 10 hours per day. A major ailment associated with prolonged excessive pressure on the knee is "miners' knee" also known as pre-patellar bursitis. Bursitis occurs when the bursa sack (a protective cushioning sack) over the kneecap becomes inflamed, swells and becomes painful. Over time, major knee problems will develop when the cartilage and tissue (meniscus) cushion located between the bones of the knee joint wear out causing bone to wear against bone. Additionally, the excessive pressure can cause a variety of problems including knee burn pain, fluid build up, tissue swelling, loose joints and associated arthritic conditions. Major knee damage is inevitable when you combine the physical damage from prolonged excessive pressure, irritations/infections along with the turning and twisting motions made when working in low coal.

Through experimentation, this mining company found that a key component in an effective "knee pad protection system" is a high impact resistant foam sports type under-garment knee pad ("knee sleeve"). This pad is worn either against the skin or over underwear in addition to a conventional outer-garment pad. Miners with previous knee injuries found the pad improved comfort, support and reduced pain. These folks have not yet found an optimum outer-garment conventional knee pad design, but they continue to work with manufacturers and MSHA District #2 personnel to improve their "knee pad protection system". So far, they found other key elements of an effective "knee pad protection system" include the following:

- Issuing two sets of under-garment pads to miners for change out each shift.
- Training for injury prevention, use, cleaning, disinfecting and drying of knee pads.
- Regular use of recommended antiseptics and analgesics.
- Selection of outer pads is based on the individual miners fit and level of comfort.
- Administrative controls involving on shift job rotation at regular intervals.
- Use of mats ("magic carpet") attached/near equipment such as MBC units.

For more information regarding this idea please contact Walt Slomski, MSHA - Tech. Support, Accident Reduction Program at (304) 547-2079.

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