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SUBJECT: Safety Precautions for Operating Rubber Tired and Track-Mounted Excavators

**Who needs this information?**

This Program Information Bulletin (PIB) applies to surface coal and metal and nonmetal mine operators, contractors, equipment manufacturers, miners, miners' representatives, and Coal and Metal and Nonmetal Mine Safety and Health enforcement personnel.

**What is the purpose of this PIB?**

This PIB alerts the mining industry and MSHA enforcement personnel of hazards related to operation of rubber-tired and track-mounted excavators used at surface coal and metal and nonmetal mines. Improper operation, inadequate equipment protection and operator training procedures can result in serious injuries or fatalities.

**Information**

Excavators expose miners to hazards similar to those presented by front end loaders, including rollover of the equipment and being struck by objects falling onto the equipment. To decrease the risk of injury when operating excavators, mine operators must make certain that appropriate machines are selected and used for the intended work applications, excavator operators are appropriately trained and wear seat belts, and examinations of the work area are conducted before and during the operation of the excavator. A thorough workplace examination includes checking highwalls for

loose material, overhangs, clay seams, strata slips and dislocations, and old mine openings. An examination is intended to detect unsafe conditions so that corrective action can be taken prior to work beginning, and appropriate precautions can be taken during operation.

MSHA is particularly concerned with preventing excavator accidents by implementing proper protective measures. When excavators clear highwall benches, an equipment rollover hazard may exist if the excavator is operated near the edge of the bench. The outside edge of an excavator's track should be positioned no closer to the edge of the consolidated bench surface than half the overall width of the machine. In many cases, a bench width of at least 25 feet should be sufficient to provide safe maneuverability of the equipment; however, an examination of the work area is necessary to determine if this width is sufficient.

Excavators frequently perform work that creates uneven or unconsolidated ground on elevated slopes, increasing the risk of equipment overturning. Therefore, MSHA recommends that excavators operated in elevated positions be equipped with certified roll over protection structures (ROPS), or that mine operators use dozers or other equipment that provides a higher level of protection for miners performing the work.

Excavators should also be equipped with adequate falling object protective structures (FOPS) to protect operators from material falling onto the equipment. The FOPS will reduce accidents such as those involving scaling a highwall where the highwall is at a height above the cab compartment. Mine operators should also consider other measures to protect excavator operators from being struck by material falling from highwalls, such as: (1) equipping excavators with appropriate length booms, dippers, and other related attachments to ensure the excavator and its operator remain as far from the highwall base as possible during scaling operations; and (2) utilizing rock deflectors or similar attachments to protect the excavator operator from falling material.

MSHA recommends that mine operators using excavators in the mining process contact the equipment manufacturer to determine the availability of ROPS and FOPS for retrofitting existing equipment.

In addition, excavator operators must be trained to recognize hazards in the work area, including the adverse effects of the weather and freeze/thaw cycles. The excavator operator at times must not be so attentive to the task of loading material or scaling the highwall, that they become unaware of hazards. Task and refresher training tailored to the prevailing conditions at individual mine sites, and regular observation of, and feedback to, equipment operators will provide the best environment for early detection and correction of operational behavior errors and actions that may place miners at risk.

### **What is the background for this PIB?**

From January 1, 2002, through September 29, 2009, sixteen accidents involving excavators occurred at surface coal mines. Eleven of these accidents were the result of equipment rolling over, while five accidents were the result of objects or material falling or sliding onto the equipment. Two of the sixteen accidents resulted in fatal injuries. In one accident, a miner received fatal crushing injuries when the excavator he was operating rolled over a bench onto its side while cleaning a bench. During the process of repositioning the equipment, the operator misjudged his position and one of the tracks slipped over the edge of the bench.

From January 1, 2002 through September 29, 2009, thirty-four accidents involving excavators occurred at surface metal and nonmetal mines. Seventeen of the accidents were the result of material falling or sliding onto the excavator and twelve of the accidents were the result of equipment rolling or sliding over. Four of the thirty-four accidents resulted in fatalities. One of those fatalities was a result of the ground failing under an excavator working on an embankment, causing it to tip over.

### **What is MSHA's authority for this PIB?**

The Federal Mine Safety and Health Act of 1977, as amended, 30 U.S.C. § 801 et seq.; 30 C.F.R. § 77.1713(a), 30 C.F.R. §§ 56.18002, 30 C.F.R. § 56.3130, 30 C.F.R. § 56.3401, 30 C.F.R. 46.7 and 30 C.F.R. 48.27

### **Where is this PIB on the Internet?**

This information may be viewed on the Internet by accessing [MSHA's home page](#), then choosing "Compliance Info" and "Program Information Bulletins."

### **Who are the MSHA contact persons for this PIB?**

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### **Who will receive this PIB?**

MSHA Program Policy Manual Holders

Miners' Representatives

Coal and Metal and Nonmetal Mine Operators

Contractors performing work at Coal and Metal and Nonmetal Mines

Equipment Manufacturers

Special Interest Groups