

the continuous mining machine and moving forward as the coal is cut. Since coal is not actively mined in the cut during roof bolting, methane liberation decreases. For these reasons, MSHA believes this alternative method does not diminish safety.

The proposed rule required the manual methane test to be made either "from under the last permanent roof support" or from the roof bolter's work position protected by the deployed ATRS. The final rule changes this language to require making the test either "from under permanent roof support" or from the roof bolter's work position protected by deployed ATRS. This change allows the final rule to better conform to MSHA's existing roof control rules and policies because most approved roof control plans do not generally permit miners past the second to the last row of permanent roof supports.

#### *G. Subparagraph 75.362(d)(3)(v)*

Subparagraph 75.362(d)(3)(v) of the final rule requires that, once a methane test is made at the face, all subsequent methane tests must be made at the face. As the roof bolting machine advances toward the face, the probe used for the methane test will eventually reach the face. A number of rows of roof bolts will then be installed before the roof bolting machine reaches the face area and the cut is completely bolted. Methane tests will be made at the face area while these final rows of roof bolts are installed.

One commenter suggested deleting this provision as part of an overall suggestion to test with a hand-held methane detector at the last permanent roof support. Another commenter suggested phrasing the rule so that testing at the face would be required when the roof bolting machine reaches a distance from the face equal to two rows of bolts. This distance would generally be about eight feet. As stated above, MSHA believes that the combination of 16-foot inby sweeps to test for methane accumulating in the cut and continuous methane monitoring at the roof bolting machine provides a level of protection that does not diminish safety. Testing with a hand-held methane detector at the last working place or with a shorter probe would not provide adequate assurance that methane is not accumulating further in the cut. Therefore, this subparagraph remains unchanged from the proposed rule.

#### *H. Subparagraph 75.362(d)(3)(vi)*

Subparagraph 75.362(d)(3)(vi) of the final rule allows the district manager to require that the ventilation plan include

a minimum air quantity and the position and placement of ventilation controls to be maintained during roof bolting operations. No comments were received on this subparagraph. The final rule is unchanged from the proposed rule.

The NIOSH study, as well as MSHA's experience, shows that ventilation is effective and appropriate during roof bolting operations under certain mining conditions. Some mines liberate substantial quantities of methane, or have a history of ignitions or noncompliance with respirable dust standards for bolting machine operators. The ventilation plans for such mines generally require minimum air quantities to be maintained at the roof bolting machine. In evaluating ventilation plans, district managers will continue to assess these and other factors to determine the necessity for plan parameters for air quantities and ventilation control devices.

The NIOSH study was conducted using ventilating air quantities of 4,000 cfm and 7,000 cubic feet per minute (cfm), with methane released at various points at a rate of five cfm. The study shows that ventilation is effective in removing methane from working areas around roof bolting machines where significant quantities of methane are liberated in the working place and at the face. In these conditions, mine ventilation plans could specify minimum ventilation quantities and the position of the ventilation control devices.

After the NIOSH study was completed, MSHA reviewed the accident reports for all of the 41 reported methane ignitions that occurred at roof bolting machines between 1994 and 1998. The MSHA report, "Methane Ignitions on Roof Bolters in Underground Coal Mines" found that all these ignitions occurred in mines that are considered to have the highest methane liberation. Each of these mines liberated over 850,000 cubic feet of methane per day. Section 103(i) of the Mine Act requires MSHA to conduct spot inspections at least every ten working days at mines liberating over 500,000 cubic feet of methane during a 24-hour period, and at least every five working days at mines liberating over one million cubic feet of methane during a 24-hour period.

The MSHA report, as well as MSHA's experience, indicates that most ignitions at roof bolting machines in mines that liberate significant quantities of methane can be avoided by maintaining adequate ventilation during roof bolting. The rule provides an equivalent level of safety as the existing rule and does not

diminish safety, while at the same time allowing flexibility by permitting MSHA to set mine-specific requirements through the ventilation plan.

## **II. Impact Analyses**

### *A. Cost and Benefits: Executive Order 12866*

Executive Order 12866 requires regulatory agencies to assess both the costs and benefits of regulations. In making this assessment, MSHA determined that although this final rule will not have an annual effect of \$100 million or more on the economy, and therefore is not a significant regulatory action as defined by § 3(f)(1) of E.O. 12866, the rule meets the § 3(f)(4) definition, that is, the rule may " \* \* \* raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order." MSHA completed a Regulatory Economic Analysis (REA) which estimates both the costs and benefits of the rule. This REA is available from MSHA and is summarized below.

The final rule allows an alternative method of methane testing that ensures at least an equivalent level of protection as the existing standard and results in net cost savings of \$6.9 million annually to the industry.<sup>1</sup> The alternative testing method augments periodic inby methane tests with continuous methane monitoring at the roof bolting machine. This two-tiered approach assures that hazardous levels of methane are not present or accumulating either inby or at the roof bolting machine.

The inby methane tests are made at least every 20 minutes by sweeping a probe or other acceptable arrangement at least 16 feet inby the last permanent roof support. However, when the probe reaches the face area, the remaining tests are made with the methane detector positioned at least 12 inches from the roof, rib, and face. A probe not longer than 20 feet will allow the qualified person to make this test from a safe position four feet outby the last permanent roof support. The shorter probe arrangements required for the 16-foot sweep are easier to maneuver and cost less than those used to comply with the existing requirements. Additionally, the sweeps can be made more quickly than the test required under the existing rule.

The alternative testing method also requires each roof bolting machine to have both an MSHA-approved, permanently mounted methane monitor

<sup>1</sup> Cost data are provided by MSHA's Regulatory Economic Analysis for this rule, dated January, 2003.