

installations for the products of combustion. Under existing §§ 75.340(a)(1)(ii) and 75.340(a)(2)(ii), mine operators may choose to monitor transformer stations, battery charging stations, substations, rectifiers, and water pumps for CO or smoke instead of coursing the intake air ventilating the structure or area housing these installations into a return air course. Under this alternative, existing §§ 75.340(a)(1)(ii) and 75.340(a)(2)(ii) require at least one CO or smoke sensor to monitor the intake air ventilating the installation. The sensor must be located no greater than 50 feet downwind from the installation.

Paragraph (i) of the proposed rule establishes and standardizes specific alert and alarm settings for any AMS used in accordance with §§ 75.323(d)(1)(ii), 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), 75.350(c), or 75.362(f). The alert and alarm levels proposed are consistent with decision and orders issued by the Administration in recent petitions submitted by mine operators requesting a modification of the standard.

Proposed paragraph (i)(1) would require that when an AMS is used to monitor methane concentrations in return air splits to comply with § 75.323(d)(1)(ii), it gives an alarm when the methane reaches 1.5 percent and the actions specified in § 75.323(d)(2) must be taken. An alert level is not specified for methane sensors monitoring immediate return splits for § 75.323(d)(1)(ii). The return air split alternative provisions under § 75.323(d) only require action when the methane concentration is 1.5 percent or higher. Therefore, no alert is specified. The alarm would be given at the working section so personnel can start the actions required by existing § 75.323(d)(2).

Existing § 75.340(a) requires the ventilation of specified electrical installations with intake air and permits options allowing ventilation with intake air coursed into a return air course or to the surface and not used to ventilate working sections, or using intake air where an AMS is in operation. Some options require monitoring the air for CO or smoke. Proposed paragraph (i)(2) would require that when CO sensors are used to comply with existing §§ 75.340(a)(1)(ii) and 75.340(a)(2)(ii), and proposed §§ 75.350(b) and 75.350(c), they provide an alert signal at 5 ppm above the ambient level and alarm at 10 ppm above ambient CO level. The proposed requirement is the same as that currently required in existing § 75.351(a)(3)(i) for alert signals and § 75.351(a)(4) for alarms and is also

consistent with recent requirements in granted petitions for modification. MSHA's past experience with petitions for modifications indicates that this requirement is protective of miner safety.

Proposed paragraph (i)(2) would also require that an AMS with smoke sensors alarm at a smoke optical density of 0.022 per meter. This is the same smoke optical density requirement in existing § 75.340(a)(1)(iii)(b) for smoke sensors monitoring noncombustible areas used to house electrical installations. However, the requirement for smoke sensors to provide an alarm at a smoke optical density of 0.022 per meter is a lower alarm threshold than the existing threshold of 0.05 per meter in existing § 75.351(a)(4). We explained this difference in the preamble to the final rule on safety standards for underground coal mine ventilation (61 FR 9764, 9786–87, March 11, 1996). We reprint the text of this explanation here for the convenience of the reader.

In § 75.340 (a)(1)(iii)(B) of the proposal and the preamble discussion on page 26371 [of Volume 59 of the **Federal Register**, May 19, 1994], MSHA refers to the optical density of smoke of 0.05 per meter to characterize the sensitivity of smoke detectors. As discussed in MSHA's opening statement to the ventilation rulemaking hearings, the value used for the optical density of smoke is based on information provided from the former USBM. MSHA pointed out that based on comments received from the former USBM, this number is incorrect and should be divided by 2.303 to conform to the internationally accepted term of optical density. No commenter took issue with this point. MSHA has made the correction in the final rule. One commenter suggested that optical densities be increased and based on an ambient to account for background dust. In contrast, another commenter suggested that the specified optical density should be reduced by half. MSHA has found insufficient justification to adopt either of these suggestions and believes that the specified 0.05, corrected to 0.022 based on comments from the former USBM, is the appropriate level for optical density used in § 75.340. Existing § 75.351 Atmospheric monitoring system (AMS), uses a level for optical density of smoke of 0.05 per meter. MSHA recognizes that the level in § 75.351 should also be corrected. MSHA intends to correct the level for optical density used in § 75.351 in a future rulemaking. In the meantime, MSHA will use an optical density of 0.022 per meter for purposes of § 75.340.

This rulemaking therefore proposes to lower the optical density to the proper level of 0.022 per meter when fire detection relies on smoke sensors.

For proposed § 75.351, we have standardized the alert and alarm levels from those required by some petitions to provide a more practical approach to setting alert and alarm levels. Proposed paragraph (i)(2) would require an alert signal at 5 ppm and alarm at 10 ppm CO above the ambient level based on former BOM research, Agency experience with petitions, and the Advisory Committee recommendation. These proposed levels will provide early-warning capability. The Advisory Committee recommended that alert and alarm levels for mines using belt air to ventilate a working place "should not exceed 5 ppm and 10 ppm above ambient, respectively." When smoke sensors are used, the alarm would be provided at a smoke optical density of 0.022 per meter.

The Advisory Committee also recommended that the "District Manager may establish lower alert and alarm levels for AMS based on the sensor type and sensitivity, sensor spacing, air flow, cross-sectional area, and local mining conditions." Proposed paragraph (i)(2) follows this recommendation by the Advisory Committee providing the flexibility to lower alert and alarm levels for a high air volume in the belt air course. Levels below 5 ppm and 10 ppm may be necessary when large air quantities dilute the CO in the air course. Some fire detection research set alert and alarm levels based upon air velocity, cross-sectional area, and CO generation rates from smoldering and burning fuel sources. This research was presented as nomographs used to set CO sensor settings for different sensor spacings using air velocity and entry area parameters. Tables were derived in an attempt to simplify the application of research data because the nomographs were difficult to use. Because of overlap in the tables, conflicting determinations for alert and alarm settings occurred. Though the tables provided a simpler method for reducing alert and alarm settings based on increased air flow quantities and cross-sectional areas, they have not always been easy to use because of variations in entry configuration and air velocity in an air course. MSHA believes the ventilation plan offers the best tool to handle special circumstances, such as when lower alert and alarm levels are needed due to increased air volume. We solicit comments on this simplified approach.

During the discussion on the Advisory Committee Recommendation Number 11, a suggestion was made that