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30 CFR Part 75

Underground Coal Mine Ventilation—Safety Standards for the Use of a Belt Entry as an Intake Air Course To Ventilate Working Sections and Areas Where Mechanized Mining Equipment Is Being Installed or Removed; Proposed Rule

DEPARTMENT OF LABOR

Mine Safety and Health Administration

30 CFR Part 75

RIN 1219–AA76

Underground Coal Mine Ventilation—Safety Standards for the Use of a Belt Entry as an Intake Air Course To Ventilate Working Sections and Areas Where Mechanized Mining Equipment Is Being Installed or Removed

AGENCY: Mine Safety and Health Administration, Labor.

ACTION: Proposed rule; notice of public hearings; notice of close of record.

SUMMARY: The proposed rule would allow the use of intake air passing through belt air courses (belt air) to ventilate working sections and areas where mechanized mining equipment is being installed or removed in underground coal mines. The use of belt air, under the conditions set forth in the proposed rule, would maintain the level of safety in underground mines while implementing advances in mining technology. This proposed rule would amend the existing safety standards for ventilation of underground coal mines. The proposed rule would also revise other standards.

DATES: Comments must be received on or before March 28, 2003. Submit written comments on the information collection requirements by March 28, 2003.

The public hearing dates and locations are listed in the Public Hearings section below under **SUPPLEMENTARY INFORMATION**. If individuals or organizations wish to make an oral presentation for the record, we ask that you submit your request at least 5 days prior to the hearing dates.

The post-hearing comment period will close 30 days after the last public hearing on June 30, 2003.

ADDRESSES: *Comments:* Comments must be clearly identified as such and transmitted either electronically to *comments@msha.gov,* by facsimile to (202) 693–9441, or by regular mail or hand delivery to MSHA, Office of Standards, Regulations, and Variances, 1100 Wilson Blvd., Room 2313, Arlington, Virginia 22209–3939. You may contact MSHA with any format questions. Comments are posted for public viewing at *http://www.msha.gov/currentcomments.HTM.*

Information Collection Requirements

Send written comments on the information collection requirements to both the Office of Management and Budget (OMB) and MSHA as follows:

(1) *To OMB:* By mail addressed to the Office of Information and Regulatory Affairs, Office of Management and Budget, New Executive Office Building, 725 17th Street, NW., Washington, DC 20503, Attn: Desk Officer for MSHA; and

(2) *To MSHA:* Comments must be clearly identified as comments on the information collection requirements and transmitted either electronically to *comments@msha.gov,* by facsimile to (202) 693–9441, or by regular mail or hand delivery to MSHA, Office of Standards, Regulations, and Variances, 1100 Wilson Blvd., Room 2313, Arlington, Virginia 22209–3939.

FOR FURTHER INFORMATION CONTACT: Marvin W. Nichols, Director; Office of Standards, Regulations, and Variances, MSHA; phone: (202) 693–9442; facsimile: (202) 693–9441; E-mail: *nichols-marvin@msha.gov.* You can view comments filed on this rulemaking at *http://www.msha.gov/currentcomments.HTM.*

You may obtain copies of the proposed rule and the Preliminary Regulatory Economic Analysis (PREA) in alternative formats by calling this number. The alternative formats available are either a large print version of these documents or electronic files that can be sent to you either on a computer disk or an attachment to an e-mail. The documents also are available on the Internet at *http://www.msha.gov/REGSINFO.HTM.* We intend to place the public comments on these documents on our website shortly after we receive them.

SUPPLEMENTARY INFORMATION:

I. Public Hearings

The public hearings will begin at 9 a.m. and end after the last scheduled speaker speaks (in any event not later than 5 p.m.) on the following dates at the locations indicated:

Date	Location	Phone
April 29, 2003	Holiday Inn-Birmingham Airport, 5000 10th Avenue North, Birmingham, AL 35212	(205) 591–6900
May 1, 2003	Holiday Inn Lexington-North, 1950 Newton Pike, Lexington, KY 40305	(859) 233–0512
May 13, 2003	Country Inn & Suites By Carlson, 105 Alex Lane, Charleston, WV 25304	(304) 925–4300
May 15, 2003	Holiday Inn at the Meadows, 340 Racetrack Road, Washington, PA 15301	(724) 222–6200
May 29, 2003	Holiday Inn Grand Junction, 755 Horizon Drive, Grand Junction, CO 81506	(970) 243–6790

The hearings will begin with an opening statement from MSHA, followed by an opportunity for members of the public to make oral presentations. You do not have to make a written request to speak. Speakers will speak in the order that they sign in. Any unallotted time will be made available for persons making same-day requests. At the discretion of the presiding official, the time allocated to speakers for their presentation may be limited. Speakers and other attendees may also present information to the MSHA panel for inclusion in the rulemaking record.

The hearings will be conducted in an informal manner. The hearing panel may ask questions of speakers. Although formal rules of evidence or cross examination will not apply, the presiding official may exercise discretion to ensure the orderly progress of the hearing and may exclude irrelevant or unduly repetitious material and questions.

A verbatim transcript of the proceedings will be prepared and made a part of the rulemaking record. Copies of the transcript will be available to the public. The transcript will also be available on MSHA's Home Page at *http://www.msha.gov* at *http://www.msha.gov,* under Statutory and Regulatory Information.

MSHA will accept post-hearing written comments and other appropriate data for the record from any interested party, including those not presenting oral statements. Written comments will be included in the rulemaking record.

II. Background

A. Events Leading to Agency Action

We are proposing to amend 30 CFR 75.301, 75.371, 75.372, and 75.380 of our existing safety standards for underground coal mines. The proposed rule also would revise existing §§ 75.350, 75.351, and 75.352. These modifications are proposed in accordance with § 101 of the Federal Mine Safety and Health Act of 1977 (Mine Act), 30 U.S.C. 811 and 957.

MSHA published a proposed rule to revise the safety standards for ventilation of underground coal mines

in the **Federal Register** on January 27, 1988 (53 FR 2382). Included in that proposed rule were provisions to allow air coursed through the belt entry(ies) to ventilate working places. That proposed rule would have required mine operators to install carbon monoxide (CO) sensors in the belt entry.

In response to public comments submitted to the Agency on the January 27, 1988 proposed rule, we held six public hearings in June 1988 with the rulemaking record closing in September 1988. Based on public comments received during this period, MSHA's Assistant Secretary called for a thorough review of safety factors associated with the use of air in the belt entry in the working places in March 1989. MSHA completed this review and announced in an August 25, 1989 Notice in the **Federal Register** (54 FR 35356), the availability of the Belt Entry Ventilation Review (BEVR) Report. The report concludes that'' * * * directing belt entry air to the face can be at least as safe as other ventilation methods provided carbon monoxide monitors or smoke detectors are installed in the belt entry.''

After the BEVR report was issued, we reopened the ventilation rulemaking record and held a seventh public hearing in April 1990, to receive public comment on issues raised in the report. The reopened ventilation rulemaking record for the 1988 proposed rule closed in May 1990.

Comments received during and after the seventh public hearing expressed widely divergent views on the recommendations of the BEVR Committee. Commenters representing industry and academia stated, for the most part, that the use of air in the belt entry provides positive ventilation and reduces the possibility of a methane build-up in the belt entry. Commenters from labor, on the other hand, maintained that the use of air in the belt entry reduces safety due to increased fire hazards and greater dust levels.

Due to these divergent views, when the ventilation rule for underground coal mines was finalized in 1992, it did not include provisions that would have allowed mine operators to use belt air to provide additional intake air to working sections. MSHA's existing standards do not allow this practice except as approved on a mine-specific basis through the petition for modification process (30 CFR part 44) or when approved by the MSHA district manager for mines opened prior to March 30, 1970. The final ventilation rule retained the requirements of the existing 30 CFR 75.326.

MSHA decided that the use of air in the belt air course (belt air) to ventilate working places should continue as an independent rulemaking effort. As part of this effort, the Secretary of Labor appointed an Advisory Committee in January 1992 and charged it to make recommendations concerning the conditions under which air in the belt entry could be safely used in the face areas of underground coal mines. This committee was designated as the Department of Labor's Advisory Committee on the Use of Air in the Belt Entry to Ventilate the Production (Face) Areas of Underground Coal Mines and Related Provisions (Advisory Committee). The Advisory Committee held six public meetings over a six-month period. After reviewing an extensive amount of material, the Advisory Committee concluded that air in the belt entry could be safely used to ventilate working places in underground coal mines, provided certain precautions were taken.

The Advisory Committee made twelve recommendations to support this conclusion. The Advisory Committee submitted its report to the Secretary of Labor in November 1992. We published a December 2, 1992 Notice (57 FR 57078) in the **Federal Register** announcing the availability of the Advisory Committee's final report and stated that we would review its recommendations.

In the preamble of the rule proposed today, we discuss the recommendations of the BEVR Report and the Advisory Committee. The proposed rule also incorporates MSHA experience with petitions for modification under § 101(c) of the Federal Mine Safety and Health Act of 1977 (Mine Act).

In instances where we have not followed a recommendation made in the BEVR or Advisory Committee Reports, we either have determined existing standards are adequate to address the issue raised in the recommendation or believe that mining technology has advanced making the recommendation moot. In either case, we provide an explanation in this preamble.

B. Agency Experience

Since the early 1970's, mine operators have used Atmospheric Monitoring Systems (AMSs) to monitor certain aspects of the mine atmosphere. These systems typically can measure environmental parameters related to mine ventilation, air quality, and fire detection. An AMS, equipped with the proper sensors, can measure concentrations of combustible and toxic gases, oxygen levels, air velocity, and products of combustion, such as carbon monoxide (CO) or smoke. Existing § 75.351 (Atmospheric monitoring system), § 75.323 (Actions for excessive methane), § 75.340 (Underground electrical installations), and § 75.362 (On-shift examination) incorporated this technology into underground coal mine safety standards. This technology is the basis for granting petitions for modification to § 75.350 (Air courses and belt haulage entries). It allows close monitoring of the mine atmosphere when belt air is coursed to working places.

As AMSs have become more sophisticated, they have employed computer technology to transmit environmental measurements from remote locations to attended mine locations. These systems generate alarms, store and catalog data, and provide reports. Many computer-based monitoring systems have other capabilities besides atmospheric monitoring. Some systems monitor equipment status and, sometimes, provide control signals as well. Such applications improve surveillance of production and haulage, equipment maintenance, and other related management information.

During the last 15 years, MSHA has evaluated, through the petition for modification process, the safe use of belt air as intake air. This process permits a mine operator to petition that the application of 30 CFR § 75.350 be modified at a particular mine.

MSHA has granted approximately 90 petitions for modification to use belt air to ventilate working sections. MSHA grants such a petition when it determines that a mine operator has an alternative method which provides the same measure of safety protection as the existing standard, or when the existing standard would result in diminished safety protection to miners.

Only after a thorough on-site investigation verifying that the use of belt air is at least as safe as the existing safety standard does the Agency grant each petition. In the Agency's evaluation of the use of belt air, MSHA concluded that belt air can be safely used, provided that certain conditions are met. Specifically, the Agency found that the safety concerns associated with belt air use are sufficiently addressed by the proper installation, operation, examination, and maintenance of AMSs as part of a comprehensive safety program that contains other requirements. Petitions for modification of 30 CFR 75.350 (belt air petitions) contain the requirement that a mine operator install an AMS to monitor the mine atmosphere.

Mine operators filing a petition for modification under § 75.350 generally request the use of belt air to ventilate active working places dependent upon the installation of an AMS with CO sensors for early-warning fire detection in the belt entry. AMSs are also currently used for other reasons. Some mine operators petitioned the Agency under Section 101(c) of the Mine Act to install an AMS with CO sensors to comply with the requirements of § 75.1103 (Automatic fire warning devices). Existing regulations have also used an AMS as an optional choice for specific functions, such as monitoring for methane, CO, and smoke.

Mandated petition requirements and existing regulations have placed a greater reliance on AMSs' performance. Typically, an AMS is composed of a central control station that includes a computer with data storage, software, a display, a printer, etc.; a communication network or telemetry system that includes signal conditioning equipment, multiplexers, drivers, repeaters, data line, etc.; and transducers or sensors that measure the value of a given physical parameter.

The Advisory Committee recommended that MSHA should move forward with the development and promulgation of approval schedules for early-warning fire detection systems, such as AMSs. In lieu of adopting this recommendation, we propose to require that components of the system's sensors be listed or certified by a nationally recognized testing laboratory (NRTL) or approved by the Secretary. The standards used by the NRTLs to list or certify the sensors are American National Standards.

As specified in § 75.1103–2(a), MSHA currently requires that components of automatic fire sensors in belt entries be listed or certified by a NRTL or approved by the Secretary. We propose to expand this listing or certification requirement to include methane sensors. We also propose that the components can be approved by the Secretary, allowing MSHA to accept new or unique technology that has not yet been approved by a NRTL. This would help assure that new technology can be introduced into mining without delay. The current program for Evaluation of Mine-Wide Monitoring Systems and Barrier and Sensor Classifications described in MSHA's Program Circular PC–4003–0 would remain in effect. A copy of this program circular can be obtained from the Approval and Certification Center in Triadelphia, West Virginia.

Currently, an AMS must comply with the 1967 National Fire Alarm Code (§ 75.1103–2; Automatic fire sensors approved components; installation requirements). In this proposed rule, MSHA is soliciting comments on whether AMS components and the aforementioned automatic fire sensor systems should comply with appropriate sections of the 1999 National Fire Alarm Code. The National Fire Alarm Code is also an American National Standard.

Reportable Belt Entry Fires

In developing this proposed rule, MSHA reviewed the history of reportable belt entry fires to evaluate the effectiveness of various types of detection methods and the causes of these fires. Section 50.2(h)(6) of 30 CFR requires that mine operators report mine fires that are not extinguished within 30 minutes of their discovery. We are aware that fires of less than 30 minutes in duration occur. Where documentation, such as official reports or memoranda, could be found about these short-duration fires, we also considered them in developing this proposed rule. Often slightly different circumstances in these short duration fires would have resulted in a potentially serious reportable fire.

Since 1970, 75 reportable mine fires have occurred in belt entries. Seventeen of these occurred in mines where belt air ventilated working places (23%). A review of the accident reports for these 17 fires showed that nine occurred in mines that used only an AMS with CO sensors for fire detection; two occurred in mines that used only point-type heat sensors (PTHS) for fire detection; and two occurred in mines using both an AMS with CO sensors and PTHS for fire detection. Reports of the remaining five fires did not state the type of fire detection system in use. However, based on the dates of the fires (1972—1974) and the fact that CO systems were not in use before 1975, four of these mines probably used PTHS for fire detection.

The first reportable belt entry fire in a mine equipped with an AMS occurred in 1983 at the Jim Walters No. 7 Mine. Since then, we have investigated 16 belt entry fires in AMS equipped mines (10 in mines that used air in the belt air course to ventilate working places and 6 in mines that did not). Two of these mines had both AMS and PTHS installed in the belt entry. Of the 16 fires occurring in belt entries equipped with an AMS, the AMS detected all of the fires. Instances occurred when the AMS was not properly utilized or responded to by mine personnel (*e.g.*, alarms were disconnected or were ignored). Sometimes, although the AMS functioned as intended and provided notification of a fire, the fire was detected by sight or smell before detection by the AMS.

The first reportable belt entry fire detected with a PTHS system occurred in 1980 at the Peabody No. 10 Mine. From 1970 to date, 43 fires occurred in belt entries of mines equipped with PTHS. This includes the two mines with both AMS and PTHS. Of the 43 fires occurring in belt entries equipped with PTHS, the PTHS reportedly detected only six fires. Table 1 lists the reportable belt entry fires included in this analysis.

TABLE 1.—REPORTABLE CONVEYOR BELT ENTRY FIRES, 1970–2002

	Mine name	Date	Sensor type	Fire detected by . . .	Alert & alarm (PPM)	Belt air in working place	Belt running
1	Geneva	1/20/70	No Record	Sight and/or Smell		No	Yes
2	Kermit No 1	8/7/70	No Record	Sight and/or Smell		No	No
3	Rainbow No 7	10/25/70	No Record	Sight and/or Smell		No	No
4	Castlegate No 4	12/14/70	No Record	Sight and/or Smell		No	No
5	Jones Fork	12/27/70	No Record	Sight and/or Smell		No	No
6	Kenilworth	7/13/71	No Record	Sight and/or Smell		No	No
7	Pioneer	12/26/72	No Record	Sight and/or Smell		Yes	No
8	Colver	8/22/73	No Record	Sight and/or Smell		Yes	Yes
9	Bethlehem, No 31	10/29/73	No Record	Sight and/or Smell		Yes	No
10	Fedscreek, No 2	11/20/73	PTHS	Sight and/or Smell		No	No
11	Wentz No 11	6/29/74	No Record	Sight and/or Smell		Yes	No
12	Jewell Ridge No 1	4/8/76	PTHS	Sight and/or Smell		Yes	No
13	Alpine	12/9/76	PTHS	Sight and/or Smell		No	No

TABLE 1.—REPORTABLE CONVEYOR BELT ENTRY FIRES, 1970–2002—Continued

	Mine name	Date	Sensor type	Fire detected by . . .	Alert & alarm (PPM)	Belt air in working place	Belt running
14	FMV No 1	12/10/76	PTHS	Sight and/or Smell		No	No Record
15	Kopperston No 1	3/20/77	PTHS	Sight and/or Smell		No	No Record
16	Florence No 1	7/13/77	PTHS	Sight and/or Smell		No	No
17	Island Creek No 9E	9/23/77	PTHS	Sight and/or Smell		No	No
18	Camp No 1	3/14/79	PTHS	Sight and/or Smell		No	No
19	Orient No 4	11/22/79	PTHS	Sight and/or Smell		No	No
20	Peabody No 10	1/12/80	PTHS	PTHS		No	No
21	Raccoon No 3	9/7/80	PTHS	Sight and/or Smell		No	Yes
22	Lancashire, No 24–D	11/1/80	PTHS	PTHS		No	No Record
23	Bull Creek No 4	12/15/80	PTHS	Sight and/or Smell		No	Yes
24	Central Appalachian No 4.	11/7/81	PTHS	Sight and/or Smell		No	No
25	Beatrice	11/25/81	PTHS	Sight and/or Smell		Yes	No Record
26	Star North	12/16/81	No Record	Sight and/or Smell		No	No Record
27	D. O. & W.	2/3/82	PTHS	Sight and/or Smell		No	No
28	Newfield	3/4/82	PTHS	PTHS		No	No
29	Cannelton No 8	3/26/82	PTHS	Sight and/or Smell		No	No
30	V. P. No 2	5/21/82	No Record	Sight and/or Smell		No	No
31	JWR No 7	3/15/83	CO Sensor	AMS	10 & 15	Yes	No Record
32	Emerald No 1	12/19/83	PTHS	Sight and/or Smell		No	Yes
33	Beehive	12/29/83	NONE	Sight and/or Smell		No	No
34	Gateway	1/18/84	PTHS	Sight and/or Smell		No	No
35	Camp No 2	1/18/84	No Record	Sight and/or Smell		No	No
36	Duncan No 3	4/16/84	PTHS	Sight and/or Smell		No	No
37	Allied No 2	8/8/84	PTHS	Sight and/or Smell		No	No Record
38	Shawnee	1/30/85	PTHS	Sight and/or Smell		No	No
39	JWR No 7	3/26/85	CO Sensor	AMS	10 & 15	Yes	No Record
40	JWR No 4	5/4/85	CO Sensor	AMS	10 & 15	Yes	No Record
41	Fountain Bay No 1	5/6/85	PTHS	Sight and/or Smell		No	No Record
42	Pyro No 9, Wheatcroft	8/18/85	PTHS	Sight and/or Smell		No	No Record
43	Apache No 2	8/23/85	PTHS	Sight and/or Smell		No	No Record
44	Shoemaker	1/4/86	PTHS	Sight and/or Smell		No	No Record
45	TLC No 1	6/23/86	No Record	Sight and/or Smell		No	No Record
46	Old Ben 21	11/6/86	PTHS	Sight and/or Smell		No	No Record
47	Florence No 1	11/27/86	PTHS	PTHS		No	No
48	Beckley	4/1/87	CO Sensor	Sight and/or Smell & AMS.		Yes	No
49	Florence No 1	10/20/87	PTHS	Sight and/or Smell		No	No
50	Blazing Saddles No 1	12/9/87	PTHS	Sight and/or Smell		No	Yes
51	Marianna No 58	3/7/88	CO Sensor & PTHS	ANS & Sight and/or Smell.	UNK	Yes	Yes
52	Florence No 1	5/9/88	PTHS	Sight and/or Smell		No	No
53	Sinclair Slope UG No 2	5/13/88	PTHS	Sight and/or Smell		No	No Record
54	Kopperston No 2	8/20/88	PTHS	Sight and/or Smell		No	No
55	Brent No 1	11/15/88	PTHS	Sight and/or Smell		No	No Record
56	Eighty Four Complex	7/24/89	CO Sensor	AMS	7 & 10	Yes	No Record
57	Baldwin	2/8/90	PTHS	PTHS		No	No Record
58	Florence No 2	4/11/90	PTHS	Sight and/or Smell		No	No Record
59	Greenwich No 2	6/18/90	PTHS	Sight		UNK	
60	Sunnyhill No 9 South	7/5/90	PTHS	PTHS		No	No
61	McElroy	1/2/92	No Record	Sight and/or Smell		No	Yes
62	Dilworth	1/22/92	CO Sensor & PTHS	AMS	10 & 15	Yes	No
63	Jen No 30	3/9/92	PTHS	Sight and/or Smell		No	No
64	Montcoal No 7	5/9/92	CO Sensor	AMS & Sight and/or Smell.	10 & 15	No	Yes
65	Splashdam	10/11/92	CO Sensor	AMS & Sight and/or Smell.	UNK	Yes	Yes
66	Bullitt	3/9/94	CO Sensor	AMS	4 & 8	Yes	No
67	Eagle Valley	11/28/94	CO Sensor	AMS	10 & 15	No	Yes
68	Ohio No 11	5/5/95	CO Sensor	AMS	10 & 15	No	Yes
69	Old Ben 26	1/1/97	CO Sensor	AMS & Sight and/or Smell.	10 & 15	No	No
70	Roadside North Portal	1/3/98	CO Sensor	AMS	10 & 15	Yes	No
71	Zeigler No 11	3/18/98	PTHS	Sight		No	Yes
72	Shoal Creek	9/3/99	CO Sensor	AMS	5 & 10	Yes	Yes
73	Paramount No 21	3/7/00	PTHS	Sight		No	
74	Darmac No 3	1/30/02	PTHS	Sight		No	
75	Blue Diamond No 77	4/17/02	CO Sensor	AMS	5 & 10	No	No

AMS—Atmospheric Monitoring System.
CO—Carbon Monoxide.
PTHS—Point Type Heat Sensor.

Nonreportable Belt Entry Fires

We have investigated some mine fires of less than 30 minutes duration, even though we do not require reporting of such fires. Since 1987, we have investigated 13 nonreportable belt entry fires in mines that used an AMS. Three of these mines used both a CO-based AMS and PTHS. Of these 13 fires, four were detected by the AMS, two were detected by sight or smell followed by detection by the AMS, one was detected by the AMS followed by a heat sensor, and six were detected by sight or smell alone. Anecdotal information suggests that AMS have also detected other events, such as hot belt rollers and belts running in coal before a fire occurred. Table 2 provides information on nonreportable belt entry fires.

TABLE 2.—INVESTIGATED NONREPORTABLE (<30 MINUTES) BELT ENTRY FIRES WHERE AMS USED

	Mine name	Date	Sensor type	Fire detected by * * *	Alert alarm (PPM)	Belt air in working place
1	Sunnyside No 3	5/13/87	CO Sensor & PTHS	Sight and/or Smell	No Record	
2	McClure No 1	4/14/90	CO Sensor	Sight and/or Smell	No Record	
3	McClure No 1	4/15/90	CO Sensor	Sight and/or Smell	No Record	
4	Bethlehem No 84	6/21/91	CO Sensor	AMS	4, 7 & 10	Yes
5	Cambria Slope 33	11/1/91	CO Sensor	Sight and/or Smell	No Record	
6	JWR No 5	5/25/92	CO Sensor	AMS	10 & 15	Yes
7	Blacksville No 2	3/15/92	CO Sensor &PTHS	AMS Then PTHS	10 & 15	
8	Air Quality	2/22/95	CO Sensor	AMS	10 & 15	
9	Lightfoot	10/95	CO Sensor	Sight and/or Smell	No Record	
10	Bailey	6/19/96	CO Sensor & PTHS	Sight and/or Smell Then AMS	10 & 15	
11	Foidel Creek	10/22/96	CO Sensor	AMS	7 & 11.7	
12	Shoemaker	1/6/00	CO Sensor	Sight	10 & 15	No
13	Wabash	10/15/01	CO Sensor	Sight and/or Smell Then AMS	10 & 15	No

AMS—Atmospheric Monitoring System.
ACO—Carbon Monoxide.
PTHS—Point Type Heat Sensor.

III. Summary and Considerations of the Advisory Committee Report, Recent Belt Air Petitions, and BEVR Report

The following summaries are provided to compare the proposed rule with the recommendations made in the Advisory Committee Report and the BEVR Report, as well as requirements contained in recent belt air petitions.

A. Overview of Advisory Committee Recommendations and Proposed Rule Sections

The following section reviews recommendations made by the Advisory Committee and cites applicable proposed rule language. The proposed rule includes the vast majority of the Advisory Committee recommendations. Where the recommended conditions are not included, we discuss MSHA's reasons for not proposing them as part of this rulemaking. In addition, the recommendations are specifically addressed in the Section-by-Section Analysis.

There are three basic issues addressed by the Committee report, with a number of recommendations under each issue. These issues are:

1. The conditions under which belt haulage entries could be safely used as intake air courses to ventilate working places;

2. Minimum air velocities in belt entries; and

3. Ventilation of escapeways.

B. Advisory Committee Recommendations

Advisory Committee Recommendation 1. Belt haulage entries can be safely used as intake air courses to ventilate working places provided additional safety and health conditions are met.

The Advisory Committee affirmed the recommendation that belt air could be safely used providing carbon monoxide or smoke detectors were installed in the belt entry. The Agency agrees, and is proposing to modify § 75.350 to allow the use of belt air provided certain requirements are met, including the installation of an AMS, equipped with carbon monoxide monitors or smoke detectors.

Advisory Committee Recommendation 2. When belt haulage entries are used to ventilate working places, one of the additional conditions is the presence within the belt haulage entry of an early-warning fire detection system.

Included in this recommendation are 14 items for the Agency to consider in administering the implementation of early-warning fire detection systems.

Item 1. Actions Before Using Belt Air for Face Ventilation

The Advisory Committee recommended:

''Prior to belt haulage entries being used to ventilate working places:

(a) Proposed changes should be outlined in the mine ventilation plan;

(b) Miners shall be trained in the basic principles of the early warning fire detection system and the actions required in the event of a section alarm;

(c) Appropriate personnel responsible for installation, maintenance, operation and inspection of the system should be trained in their duties; and

(d) The early warning fire detection system should be inspected by MSHA.''

For mines currently not using belt air to ventilate working sections (*i.e.*, those without granted petitions), the mines would need to receive MSHA approval to make required changes in their ventilation plans prior to using belt air to ventilate working sections. We propose a requirement for training of miners under § 75.350(b)(2). These specific training requirements could be included in the training required under part 48. Specific training requirements for AMS operators are proposed in § 75.351(q).

We did not include in this proposed rule a separate requirement for MSHA to inspect the fire detection system because AMSs used in belt entries would be inspected as part of normal MSHA inspection activities. The proposed rule includes all other conditions of this Advisory Committee item.

Item 2. Capabilities of the AMS

The Advisory Committee recommended:

''The early warning fire detection system should be capable of:

(a) Monitoring electrical continuity and detecting electrical malfunctions of the system;
(b) Identifying any activated or malfunction sensor; and
(c) Giving notice of a fire for a minimum of four hours after the source of power to the belt is removed, except when power is removed during a fan stoppage or the belt is examined as provided in section 75.1103–4(e)(1) or (2).''

Monitoring circuit continuity and electrical malfunctions is required under proposed § 75.351(c), minimum operating requirements. This is also the section of the proposed rule addressing identification of any activated or malfunctioning sensor. Belt stoppages are addressed in proposed § 75.351(a). The proposed rule includes all conditions of this item.

Item 3. Minimum Velocity and Location of Sensors

The Advisory Committee recommended:

''In mines using belt air to ventilate working places, the minimum velocity in the belt haulage entry should be at least 50 fpm. An early warning fire detection system (low level carbon monoxide or equivalent) in belt haulage entries should monitor the atmosphere at the following locations:
(a) Belt entries utilized as intake aircourses, at intervals not to exceed 1,000 feet;
(b) At the section tailpiece or not more than 50 feet inby the tailpiece on the same split of air;
(c) One sensor at the drive unit area (belt drive, belt take-up, belt tailpiece or combination thereof) not less than 50 feet and not more than 100 feet inby on the same split of air; and
(d) When belt and track are in separate entries and are not separated by stoppings on section panels, a CO (or equivalent) sensor should be placed at the inby end of the section track.''

The proposed rule requirement varies slightly from the Advisory Committee report, which suggested minimum velocities of 50 feet per minute (fpm). Proposed §§ 75.351(e)(1) and (4) contain the requirements for the section tailpiece sensor and at each drive along the belt.

Proposed § 75.351(e)(3) includes the 50 fpm minimum in locations where 1,000-foot sensor spacing is used. However, we have proposed the use of lower air velocities, providing sensor spacing is reduced to 350 feet. These lower air velocities are based on research conducted by the National Institute of Occupational Safety and Health (NIOSH) after the Advisory Committee report was completed.

The Advisory Committee recommended that a sensor be placed at the end of the track when the track and belt are not separated by stoppings. We believe this requirement does not add a significant level of protection because the sensor at the end of the track would monitor the same air as the sensors in the belt entry. Our in-mine studies indicate that there is air movement between these entries in the air course, making monitors in the belt entry sufficient for early detection of contaminants. Therefore we do not propose placing a sensor at the end of the track. We are proposing the installation of sensors in the intake escapeway, separate from belt.

However, we have included in proposed § 75.351(e)(5) a requirement for other monitoring locations required by the district manager and specified in the mine ventilation plan. This provision would require the placement of a sensor at the end of the track if the district manager determines that it is necessary. The proposed rule includes all other conditions of this item.

MSHA agrees that for mines using sensor spacing of 1,000 feet, the minimum velocity of 50 fpm must be maintained. As the Advisory Committee recognized, the air flow rate is an important variable in fire detection. We have proposed a requirement in § 75.352(e) to address situations where less than 50 fpm is measured in mines with 1,000 foot sensor spacing to assure that the ventilation system is returned to proper operation. In these circumstances, a trained person would patrol and monitor the affected area until the air flow is restored.

Item 4. Section Alarms

The Advisory Committee recommended:

''Section alarms should give a visual and audible warning signal on the affected working section if carbon monoxide (or equivalent) reaches the established levels. The section alarm should be at a location where it can be seen or heard by persons working on the section.''

The Advisory Committee stated that section alarms should give a visual and audible signal on the affected working section if CO levels reach 'established levels,' and that section alarms be located where they can be seen or heard. Under proposed § 75.351(c)(4), section alarms would give a visual and audible signal and would need to be located where they can be seen and heard when the CO, smoke, or methane concentration at any sensor reaches the alarm level specified in § 75.351(i).

The proposed rule would not require automatic section alarm activation during alert conditions, but rather only during alarm conditions. MSHA believes the frequency of alert signals could lead to complacency among miners, and it is preferable for other actions, as noted in proposed § 75.352, to occur at alert levels. Proposed § 75.352(b)(1) would require that the sensor activated be identified and an examination begun immediately to determine the cause of the alert signal. The proposed rule meets the recommendation of alarm location included in this item.

Item 5. Responsible Person at Surface

The Advisory Committee recommended:

''At all times when miners are underground a responsible person(s) should:
(a) Be on duty on the surface, so that the alert/alarm signals can be seen or heard;
(b) Maintain a record of each alert and alarm signal and actions taken;
(c) Have 2-way communication with all working sections. When alert and alarm levels are reached, this person should notify personnel at working sections and other personnel who may be endangered;
(d) Be trained in the operation of the early warning fire detection system and emergency communication system.
(e) Be trained in the proper procedures to follow in the event of an emergency or malfunction; and
(f) Take appropriate action upon alarm activation and verification.''

This item contains conditions concerning responses to alert and alarm levels by surface personnel. Proposed § 75.301 defines the responsible person as the AMS operator. The proposed section also requires that the AMS operator be on duty at a location where signals can be seen or heard, and that the operator can respond promptly to the signals. Recordkeeping requirements are included in proposed § 75.351(o), as well as two-way communications in proposed § 75.351(b)(1). Proposed § 75.351(q) requires that all AMS operators receive training in the proper operation of the AMS. The proposed rule meets the recommendation of the Advisory Committee for this item.

Item 6—Actions of Personnel Underground Upon Alert/Alarm Activation and Item 7—Actions of Personnel on the Surface Upon Alert/Alarm Activation

The Advisory Committee recommended in Item 6:

''When the early warning fire detection system reaches the alert/alarm mode, an audible and visual alarm signal should activate on the surface at the mine and at the working section(s). When section alert/alarms signals are activated the following actions should be taken:
(a) Alert—When alert levels are reached, the sensor that is activated is identified and section workers inby are notified of an ''alert mode'' and are withdrawn to a safe location

outby the working places, unless the cause is known beforehand not to be a hazard. An examination is then made to determine the cause of the activation.

(b) Alarm—When alarm levels are reached, the sensor that is activated is identified and all persons in the same split of air are withdrawn to a safe location outby the sensor activating the alarm, unless the cause is known beforehand not to be a hazard. An examination is then made and if a hazard exists, the mine Fire Fighting and Evacuation Plan is implemented.

(c) During the alert/alarm mode the belt may, at the discretion of the mine operator, continue to operate until the area is examined.''

And in Item 7 the Advisory Committee stated:

''In the event of an alert, personnel on the surface, except those necessary to investigate the cause of the alert, should not enter the affected area of the mine unless the cause of the alert is known beforehand not to present a hazard. In the event of an alarm, personnel on the surface, except those persons necessary to investigate the cause of the alarm, should not enter any area of the mine unless the cause of the alarm is known beforehand not to present a hazard.''

Actions in response to AMS alert and alarm signals for both underground and surface personnel would be covered by proposed § 75.352. In the event of an alert signal, the sensor activated would be identified and an examination would begin immediately to determine the cause of the alert signal. The Advisory Committee recommended that the section personnel be withdrawn to a safe location outby the working places. MSHA believes that this action is not warranted prior to an examination of the affected sensor. If during the examination of the sensor, a fire hazard is discovered before an alarm level is detected, evacuation should be initiated.

MSHA agrees that alarm activations should necessitate withdrawal of personnel to the sensor outby the sensor in alarm state.

The proposed rule does not address the continuing operation of a belt in the event of alarm activation. While MSHA's experience suggests that belts normally should not be stopped, it is the decision of the mine operator to take whatever actions are needed to protect miners and mine property.

There has been anecdotal evidence to show that combustion of the conveyor belt fabric does not usually occur unless the belt is stopped. Moving conveyor belts, while creating frictional heating, do not normally burn with open flame.

In addition, the proposed rule does not address restrictions on persons entering the mine when either alert or alarm signals occur. MSHA believes that mine operators must be given flexibility in how they respond to emergencies in order to better protect the miners. We believe any persons entering the mine in an emergency should be only those needed to respond to the emergency, as indicated in the mine's emergency evacuation and firefighting program of instruction, § 75.1502 (formerly referred to under § 75.1101–23—Program of instruction; location and use of fire fighting equipment; location of escapeways, exits and routes of travel; evacuation procedures; fire drills).

Item 8—Avoidance of Nuisance Alarms

The Advisory Committee stated:

''To avoid nuisance alert signals, the District Manager may approve a plan which requires incorporation of reasonable time delays or other techniques (computer/administrative) into the alert/alarm signal system. The Committee determined that experience gained by the Agency during the petition for modification process could be used as a guideline. When a planned activity which may result in CO above the alarm levels being produced, such as cutting, welding, calibration, blasting, major equipment moves requiring the use of diesel equipment, etc., is scheduled, the person in charge of the activity should notify the responsible person at the surface monitoring station of:

(a) The location and type of activity;

(b) The time the activity begins; and

(c) The time the activity is completed.

Anticipated alerts/alarms require notification to sections inby on the same split of air prior to and after planned activities.

A fire check for hot spots is required after cutting and welding is performed. Should hot spots be found, they should be extinguished immediately.''

The Advisory Committee report indicated the use of tools to reduce the frequency of alarms due to non-fire conditions could be effective in maintaining the confidence of miners as well as bolstering the importance of alarms. These tools include time delays and other data analyzing techniques which could prevent the ''cry-wolf'' syndrome, in which alarms are discounted as ''just that diesel scoop'' or ''must be cutting belt structure again.'' MSHA agrees that these tools may be of value.

Proposed § 75.351(m) allows the use of these tools when a demonstrated need exists, while proposed § 75.371(11) requires the method to be included in the approved mine ventilation plan. Time delays are limited to a maximum of three minutes. MSHA experience indicates that this is normally sufficient to account for non-fire signals.

There is technology available that distinguishes the products of combustion produced by diesel engines and by open flame. MSHA encourages the use of such technology to reduce or eliminate nuisance alarms and the need for time delays. We also believe operators should explore implementation of future technological advances. As these technologies evolve, MSHA will encourage their implementation through the mine ventilation plan approval process.

Prior to being approved for use, the operator will be expected to demonstrate the need for such a tool, as well as the expected benefit from using the tool. In this case, records indicating the frequency of alert and alarm signals, as well as the duration of the alert and alarm signals will be of value to the operator. The proposed rule meets the recommendation of the Advisory Committee for this item.

Item 9—Fire Fighting and Evacuation Plan Contents; Records and Item 10—AMS Calibration, Testing, Examinations and Records

The Advisory Committee recommended in Item 9:

''Under 30 CFR 75.1101–23(a), the mine Fire Fighting and Evacuation Plan and subsequent revisions should incorporate the operation of the early warning fire detection system and at a minimum, should specify:

(a) The action to be taken to determine the cause of the alert and alarm signals:

(b) The location(s) for withdrawal of miners for alert and alarm signals; and

(c) The procedures to be followed if an alert or alarm signal is activated.

If an alert or alarm is activated, a record should be made of the date, time, location of sensor, concentration at the sensor and the reason for its activation. The records should be reviewed and initialed by management personnel on a monthly basis.''

The Advisory Committee recommended in Item 10:

''In order to maintain the early warning fire detection monitoring system in proper operating condition, the following activities should be performed:

(a) The monitoring system and sensors should be visually examined at least once each coal producing shift;

(b) Each sensor should be calibrated with a known concentration of carbon monoxide (or equivalent) and air mixtures, sufficient to activate the alarm, at intervals not exceeding 31 calendar days;

(c) Alert and alarm signals should be tested for operation at intervals not exceeding 7 days; and

(d) Inspection records should be maintained on the surface, recording the date and time of each weekly test of alert and alarm signals, calibration, and maintenance performed on the system. The records should be maintained for one year and made available to management, MSHA and mine personnel.''

MSHA agrees with the Advisory Committee report that there are specific activities following the activation of

alert and alarm signals that should be covered under the provisions of the approved program of instruction under § 75.1502 (commonly referred to as the mine emergency evacuation and firefighting program of instruction). We have included in proposed §§ 75.351(b)(1), 75.352(a)(2), and 75.352(b)(2), requirements for including these actions and additional information in the approved program of instruction. It is MSHA's experience that the operator can use the data recorded from alert signals, alarms, malfunctions, calibrations, and maintenance as an effective tool for maintaining an effective fire detection system. MSHA is not proposing to require the operator to review and initial records on a monthly basis because we believe that the proposed requirements of § 75.351(o)—recordkeeping and § 75.351(p)—retention period, fulfill the intent of this recommendation. MSHA expects since the ''AMS log'' is available for review by the miners and authorized representatives of the Secretary, that the mine operator will also review the AMS log data.

MSHA is including in proposed § 75.351(n) requirements for examinations, testing, and calibration of the AMS sensors. These are the same requirements recommended by the Advisory Committee. MSHA is proposing in § 75.351(o) recordkeeping requirements for alert and alarm signals, malfunctions, tests, calibrations, and maintenance of the AMS. We intend the visual examination to be completed as part of the on-shift examination already required under § 75.362(b).

Item 11—AMS Malfunction

The Advisory Committee recommended:

''If any portion of the early warning fire detection system malfunctions, the affected belt haulage conveyor may continue to operate. The responsible person should notify all sections affected. Once it has been determined that the cause is a malfunction, a qualified person(s) having access to communications with the responsible person on the surface should patrol the affected area and monitor for carbon monoxide or equivalent with a handheld detector(s) as outlined below for the period of time necessary to identify the problem and make necessary repairs:

(a) If one sensor becomes inoperative, a qualified person should monitor at that location;

(b) If two or more adjacent sensors become inoperative, a qualified person should patrol and monitor the area affected; and

(c) If the complete system becomes inoperative, a sufficient number of qualified persons shall patrol and monitor so the affected belt entries are traveled each hour in their entirety. If the failure lasts more than eight (8) hours, then the MSHA District Manager should be notified immediately.

Handheld carbon monoxide detectors (or equivalent) should be maintained in a working condition, and available for use in a timely manner.''

This item in the Advisory Committee report describes the actions required if any sensor(s) or portions of the AMS system become inoperable for any reason. Proposed § 75.352(d) would require the actions as suggested by the Advisory Committee to be taken. We believe that operators will have an interest in repairing and restoring monitoring capabilities as soon as possible. There is no need to limit the use of hand monitoring since it is considered a safe alternative. For this reason, we are not including a requirement to report to MSHA any malfunction exceeding 8 hours as recommended by the Advisory Committee.

MSHA is proposing to require the immediate reporting to the surface of any contaminant measurements exceeding the appropriate alert and alarm levels. Even when contaminants do not exceed alert and alarm levels, personnel must report the levels to the AMS operator at intervals not to exceed one hour. The proposed rule achieves the intent of the recommendation.

Item 12—Mine Ventilation Map

The Advisory Committee recommended:

''The mine ventilation map should contain the details of the early warning fire detection system, including the type of sensor (CO or equivalent) and the sensor location and should be posted at the mine.''

In proposed § 75.351(b), MSHA would require that a map or schematic be posted. Also, the proposed rule would require the operator to indicate the intended air flow direction at each sensor location on the map. MSHA believes this information will be helpful if evacuation of personnel is necessary. The proposed rule meets the recommendation of the Advisory Committee for this item.

Item 13—Smoke Sensors; Slippage Switches

The Advisory Committee recommended:

''In mines using belt air to ventilate working places, slippage switches should be integrated into the early warning fire detection system. Where it is not feasible to do so, the switches should be visually examined each production shift. Smoke sensors (or equivalent) when commercially available, should be installed no more than 100 feet inby each drive.''

MSHA is not adopting this recommendation of the Advisory Committee into its proposed rule. We believe that properly maintained slippage switches do not require monitoring. We would be interested in receiving comments on the merits and drawbacks of this recommendation. Specifically, we solicit comments on:

(1) The benefits of integration of slippage switch monitoring into AMSs for belt air mines;

(2) the cost of such a requirement; and

(3) any difficulty operators may experience in accomplishing this action, if required.

Item 14—Backup Communication

The Advisory Committee recommended:

''The communication system in use at the mine should be capable of providing backup communication to the working section(s). This redundancy may be in the form of; two communication lines, the use of one communication line plus another form of communication (*e.g.*, leaky feeder, trolley, wireless, automatic alert/alarms, etc.), or any other equally effective system(s) selected by the operator.

In operations having only one means of verbal communication:

(a) Transmission lines for the automatic section alarms and phone should be carried in separate entries; and

(b) In the event of failure of the phone system, and the section receives an alarm, miners should be evacuated as required in the mine Fire Fighting and Evacuation Plan.''

MSHA agrees that the communication line should be maintained in an entry other than that used for the AMS data transmission line. In proposed § 75.351(r), we would require that two separate means of communication be maintained from the surface to the working sections and setup or removal areas.

MSHA believes that the AMS data transmission line provides one form of communication, and that a second two-way system should be installed in a separate entry. If the mine's primary two-way system is installed along with the AMS line, a second method of two-way communication would be required. This method could include a second mine phone line. The proposal meets the recommendation of the Advisory Committee for this item.

C. Advisory Committee's Discussion on Velocity Caps

MSHA agrees with the Advisory Committee discussion on this issue, and has proposed in § 75.351(i)(2) that reduced alert and alarm settings may be required for some CO sensor locations. The locations would be specified in the mine ventilation plan according to the requirements in proposed § 75.371(mm).

MSHA has not included any specific document or guideline for reducing these settings. Rather, we agree with the Advisory Committee discussion that the District Manager should use all available information, including

information provided by research, as guidance for reducing the settings for specific locations. This issue must be addressed on a mine-by-mine basis as conditions warrant.

Advisory Committee Recommendation 3—Miners should be trained in the basic principles of the early-warning fire detection system and the actions required in the event of activation of a system alarm. Appropriate personnel responsible for the installation, maintenance, operation, and inspection of the system should be trained in their duties. In the special case of the AMS operator, who is the person responsible for monitoring the system, and, hence, initiating the fire fighting and evacuation plan, MSHA should assure, by examination of competency, the training and its effectiveness received by that person. At any time there are workers underground in an AMS-equipped mine, there should be a trained operator within sight or sound of the control station.

In this proposed rule, MSHA has included training requirements for AMS operators, AMS installation and maintenance personnel, and all miners to assure responses to the AMS alert and alarm signals are timely and effective. MSHA has not included a requirement for competency testing of the AMS operator because each AMS is unique to a specific mine. The mine operator is required to train the AMS operator to respond to the system. The training requirements for AMS operators are proposed in § 75.351(q) and the requirements for training of maintenance personnel are proposed in § 75.351(k). Training of both the AMS operators and maintenance personnel should be conducted in accordance with manufacturer's instructions, as part of the mine operator's maintenance program. These training programs fall under existing 30 CFR 75.160—Training programs and 75.161—Plans for training programs. General training would be required under proposed § 75.350(b)(2). Training is required for all new miners and in annual refresher training required under part 48.

Advisory Committee Recommendation 4—In mines using an AMS as a condition for using air in the conveyor belt entry to ventilate working places, the minimum velocity in the belt entry should be 50 feet per minute.

As previously discussed, MSHA agrees that for spacing of sensors at intervals of 1000 feet, a minimum velocity of 50 fpm is required. For lower velocities, research has shown that a 350-foot spacing can provide adequate early warning. MSHA has included this sensor spacing requirement in proposed § 75.351(e)(3).

Advisory Committee Recommendation 5—The agency should move forward with the development and promulgation of approval schedules for early-warning fire detection systems (including smoke sensors). Approval schedules should include performance standards as well as safety standards and should be flexible enough to permit advances in technology.

MSHA has decided not to develop approval schedules for AMSs. However, we are proposing in § 75.351(l) that the sensors be listed or certified by a nationally recognized testing laboratory (NRTL). The standards used by the NRTLs to list or certify the sensors will be American National Standards. Systems are required by existing § 75.1103–2(b) (Automatic fire sensors; approved components; installation requirements) to meet the 1967 National Fire Code, 72A. This was an American National Standard.

Requiring the NRTL approval will not discourage new technology, as we have also proposed in § 75.351(l) that the components can be approved by the Secretary, allowing MSHA to accept new technology that has not yet been approved by a NRTL. MSHA is also proposing minimum operating requirements in proposed § 75.351(c); minimum installation requirements in proposed §§ 75.351(d) and (e); and operating parameters in proposed §§ 75.351(i) and (j). We agree that the regulation must provide flexibility to allow advances in technology, and believe this approach provides that flexibility. The Agency will continue to evaluate systems for intrinsic safety.

Advisory Committee Recommendation 6—Velocities, both minimum and maximum, should provide air that is capable of containing methane and dust levels at or below the levels specified in the standards. The concentration of respirable dust in a belt conveyor haulageway used to ventilate the working place should not exceed 1.0 mg/m^3 at a point just outby the section tailpiece. The concentration of respirable dust at all other outby locations in the belt haulageways should not exceed 2.0 mg/m^3. Designated areas should be established at appropriate locations in the belt haulageway for dust measurement and should be identified in the ventilation system and methane and dust control plan.

Proposed § 75.350 (b)(3) would require respirable dust levels as recommended by the Advisory Committee, and would require the establishment of permanent designated areas for sampling near section tailpieces. The 2.0 mg/m^3 standard and establishment of designated areas for outby areas already exists in part 70. Methane action levels are addressed in § 75.323.

Advisory Committee Recommendation 7—The minimum air velocity in belt haulage entries in all mines, whether belt air is used to ventilate working places or not, should be established based on the ability of the air current to reduce the potential for methane layering.

MSHA believes that the air velocity in mines utilizing the belt as an intake under § 75.350 will have sufficient velocity to avoid methane layering. However, we believe that layering is no less dangerous in mines not using belt air. Means to address methane layering are already addressed under §§ 75.321 (Air quality) and 75.323 (Actions for excessive methane). No new provisions are included in this proposed rule.

Advisory Committee Recommendation 8—Lifelines should be installed and maintained in all primary and alternate escapeways. Tracks and belts can be treated as acceptable lifelines, provided that, where track switches and belt transfers exist, provisions are made for clear designation of the escape route.

The Advisory Committee recommended that lifelines be installed and maintained in all escapeways. The Advisory Committee heard testimony from several members of the industry to the effect that lifelines are beneficial. However, they also heard that lifelines placed in active entries were quickly destroyed due to normal mining activities and that repair was not considered a priority. Therefore, we have not included a requirement for lifelines in the proposed rule. We solicit comments on the need for, costs of, and the maintainability of, lifelines in escapeways.

Advisory Committee Recommendation 9—Ventilation of the primary and alternate escapeways should consider the interfaces and interrelationships among all aspects of the mining system (*e.g.*, the haulage system, the ventilation system, the production system, etc.). Ventilation systems should be designed and maintained to protect the integrity of the mine atmosphere in the primary intake escapeway. The alternate escapeway should be designed and maintained to maximize the possibilities of escape. Information submitted in the ventilation plan approval should include substantiating data relative to the integrity of the mine atmosphere in the escapeways under normal and pressurized conditions.

The Advisory Committee recognized the importance of protecting the ''integrity of the atmosphere'' in the primary escapeway. In addressing this issue, the Advisory Committee report states, ''it is desirable, even during normal operation of the mine, to maintain the integrity of the mine atmosphere in the escapeways by providing a positive pressure differential between the escapeways and the adjacent entries.'' MSHA agrees that separation of the belt air course from the primary escapeway is essential in

providing miners a safe route to the surface. One method to help accomplish this would be to maintain the primary escapeway at a pressure that is higher than the adjacent entries.

However, the Advisory Committee recognized that, sometimes, it may be difficult to maintain the pressure differential in the proper direction. Because of the difficulty of maintaining the primary escapeway at a higher pressure than an adjacent air course, MSHA has decided not to propose this requirement. MSHA believes that the air quantity in the belt air course and the air quantity in the intake air courses along with the pressure differential between these air courses must be addressed on a mine by mine basis through the mine ventilation plan process (§ 75.370(a)). The intent is to control the total air quantity in the belt air course relative to the other intake air courses and also to control the pressure differential between the air courses. It is vital that the belt air course and the intake escapeway ventilation be addressed as part of the entire mine's ventilation system. The proper balance must be maintained regarding total air quantities in the air courses and pressure differentials between the air courses. This can be achieved on a mine-by-mine basis through the mine ventilation plan process.

In lieu of this requirement, proposed § 75.351(f) would require the mine operator to monitor the intake escapeway air current for fire contaminants at the beginning and end of the section panel.

MSHA has included in these proposed requirements to allow for the use of point feeding to provide air to the belt entry from other intake entries. MSHA agrees with the provisions listed by the Advisory Committee, and believes that proposed §§ 75.350(c) and 75.351(f), along with the existing construction requirements for regulators under § 75.333, (Ventilation controls), achieve the objective of the recommendation.

Advisory Committee Recommendation 10—It is the consensus of the Belt Air Advisory Committee that MSHA proceed rapidly to develop regulations for improved fire resistant belting, including new testing and approval schedules. Notwithstanding the scope of the committee charter, the committee recommends that once available, the improved fire resistant belting material should be used in all underground coal mines.

This issue was placed in a separate rulemaking in 1989. Since that time the number and severity of conveyor belt fires has significantly declined. Only two of the ten conveyor belt fires reported between 1993 and 2002 involved injuries to miners. In both of these fires, the injuries were limited to smoke inhalation. We attribute this decrease in conveyor belt fires to improvements in belt monitoring and to technological advances which have occurred during the past 10 years.

The most notable improvement in belt monitoring is the mining industry's increased use of AMSs in conveyor belt passageways. Monitoring systems in general give advance warning to allow a fire in a belt entry to be detected and addressed sooner, thereby limiting fire damage and injuries to miners. An AMS also provides advanced warning of CO and methane concentrations, thereby alerting mine operators to potentially hazardous situations.

Although AMSs have been in use for many years, these systems have rapidly become more sophisticated, evolving from simple monitors into complex devices with integral computer technology capable of transmitting environmental measurements from remote locations to attended mine locations.

In addition, this proposed rule also reduces alert and alarm levels to 5 and 10 ppm, respectively, from levels specified in existing petitions for modification. Also, sensor spacing has been reduced from 2,000 feet to 1,000 feet. These additional safety requirements increase the level of fire safety in mines that choose to use belt air to ventilate working sections. Therefore, we believe that we have achieved the intent of this recommendation (reduction of belt fires) by lowering the alert and alarm levels to provide increased early warning of the presence of fire contaminants, as well as, reducing the spacing of the sensors.

Advisory Committee Recommendation 11—In mines using belt air to ventilate working places, the alert and alarm levels for AMS should not exceed 5 ppm and 10 ppm CO (or equivalent) above ambient, respectively. The MSHA District Manager may establish lower alert and alarm levels for AMS based upon the sensor type and sensitivity, sensor spacing, air flow, cross-sectional area and local mining conditions. Alerts and alarms should be automatically activated on the surface and on the working section(s) when the CO (or equivalent) levels exceed the established levels.

As previously discussed, proposed § 75.351(i) sets out the maximum alert and alarm levels at 5 and 10 ppm CO respectively. The District Manager can require lower alert and alarm levels according to this same section. The proposed rule meets all of the provisions of this recommendation of the Advisory Committee except automatic alert activation on working sections. In the section-by-section analysis of this preamble, we discuss our reasons for not including automatic alerts to be activated on working sections.

Advisory Committee Recommendation 12—In mines using belt air to ventilate working places, increased emphasis should be placed on belt entry cleanup and conveyor belt maintenance.

MSHA agrees with the Advisory Committee and believes cleanup and maintenance in the belt entry poses no less of a hazard in mines not using belt air. Accumulations of coal at drives due to spillage are prohibited according to existing § 75.400. We are not proposing any additional regulation for belt entry cleanup and maintenance.

D. Preamble Summary—Current Petition Requirements

We reviewed the latest 20 proposed decision and orders (PDOs) for petitions for modification of § 75.350 (Air courses and belt haulage entries) to determine common requirements for using belt air. Two-entry petition mines were not included in this analysis because these mines would still need to file petitions to use a two entry mining system as a result of this rule. The following requirements included in petitions are identified as follows.

TABLE 3.—COMPARISON OF REQUIREMENTS IN RECENT PROPOSED DECISIONS AND ORDERS (PDOS) WITH REQUIREMENTS IN THE PROPOSED RULE

Requirement in PDOS	Number of PDOS	Requirement included in proposed rule
Installation of AMS	20 out of 20	Yes
Spacing 1000 feet	20 out of 20	Yes
Monitor Drives 50–100 feet	20 out of 20	Yes
Monitor splits 50–100 feet	20 out of 20	Yes

TABLE 3.—COMPARISON OF REQUIREMENTS IN RECENT PROPOSED DECISIONS AND ORDERS (PDOS) WITH REQUIREMENTS IN THE PROPOSED RULE—Continued

Requirement in PDOS	Number of PDOS	Requirement included in proposed rule
Monitor Electrical Installations 100 feet	20 out of 20	Yes (50 feet)
Identify activated sensor	20 out of 20	Yes
Minimum air velocity 50 fpm	20 out of 20	Yes
Alert Sections, Investigate	20 out of 20	Yes
Alert/Alarm Surface, Withdraw Sections	20 out of 20	Yes
Alarm section within 4000 feet, or section mouth	20 out of 20	No
Two-way communications	20 out of 20	Yes
Alert/Alarm settings from Tables	20 out of 20	No
Maximum air quantity 202,000 cfm	20 out of 20	No
Maximum 50 percent total section intake	20 out of 20	No
Visual Examination each shift	20 out of 20	Yes
Inspection 7 days	20 out of 20	Yes
Calibration 31 days	20 out of 20	Yes
Records of Alert and Alarms, Maintenance, Calibrations	20 out of 20	Yes
Ventilation Plan Requirements	20 out of 20	Yes
Allow time delays 3 minute maximum	20 out of 20	Yes
System Failures—Monitoring and Patrolling	20 out of 20	Yes
Monitor 4 hours after power disconnect	20 out of 20	Yes
Monitor for short-circuit, open circuit	20 out of 20	Yes
Method for determining ambient specified	20 out of 20	No
Respirable Dust 1.0 mg/m^3—DA	20 out of 20	Yes
Study required—multiple entries	20 out of 20	No
Mine design requirement—protect escapeway	20 out of 20	No
Alert—Notify and Investigate	20 out of 20	Yes
Alarm—Withdraw miners	20 out of 20	Yes
Intake escapeway restrictions	20 out of 20	No
Flame-resistant belting	20 out of 20	No
Allow Point-feeding	2 out of 20	Yes
Require monitoring of point-feed	1 out of 20	Yes
Minimum Velocity 400 fpm through point-feed	1 out of 20	Yes (300 fpm)

Most requirements from the § 75.350 proposed decisions and orders allowing the use of belt air are included in this proposed rule. As discussed elsewhere in this preamble, we are not including requirements for improved conveyor belt flame resistance. This rule which was originally proposed in 1992 was recently withdrawn from MSHA's regulatory agenda. (*See* 67 FR 46431). We are not requiring alarms on the section for sensors within 4,000 feet of the section to be automatically activated. Rather, we have proposed that any sensor in alarm would automatically notify affected areas.

MSHA does not include language to require limits on the air quantity carried in the belt entry or air course. The Agency expects that any mine using more than 202,000 cubic feet per minute (cfm) will be an exception, and that modifications will be made by additional sensor installations and reduced alert and alarm levels required by the District Manager. In addition, we do not include any requirement limiting the ratio of belt air quantity to the total intake air quantity coursed to the section. We believe the requirements of the proposed rule are adequate for protecting miners. We have not included tables or nomographs developed from research to be used for determining appropriate alert and alarm levels. These tools would assist MSHA District Managers in reviewing ventilation plans for approval and determining additional requirements on a mine-by-mine basis. We feel that, for typical installations, the 5 and 10 ppm alert and alarm settings are adequate.

We also do not specify a method for determining the ambient CO concentration. Under proposed § 75.351(j) mine operators would be required to provide the Agency with AMS data or an equally effective method in setting ambient levels. The method for determining the ambient CO concentration would need to be approved in the mine ventilation plan.

Unlike the § 75.350 petitions, we are not requiring a provision to require a MSHA study in mines where more than one entry is common with the belt entry. In these mines, the District Manager may require additional sensors and reduced alert and alarm settings and we expect these requirements to be set on a mine-by-mine basis.

MSHA can involve its Technical Support branch to conduct such studies in mines where multiple entries indicate that additional safeguards may be needed. We have not included additional restrictions on the use of equipment in the intake escapeway. The Agency believes existing standards in § 75.380 (Escapeways; bituminous and lignite mines) cover these requirements.

A few belt air petitions included requirements for using belt air that are not listed in Table 3. Typically, these additional requirements were requested following negotiation between mine management and labor during the petition for modification process. Most of these requirements addressed mine-specific conditions, and therefore, are not germane to the safe use of belt air for mines with three or more entries that choose to use it. Some of these requirements are covered, in part, by either existing standards or this proposed rule. Conditions addressed in existing standards include:

—*Ambient CO levels * * * shall not be determined when diesel equipment is idling in an air split.* This petition requirement is addressed in a new diesel standard that prohibits the idling of diesel-powered equipment, 30 CFR 75.1916—Operation of diesel-powered equipment.

—*A ''Wall of Water'' fire suppression system shall be installed just inby the belt take-up/storage unit for each drive unit.* Deluge-type water sprays, foam

generators, or equivalent protection are required at all belt-conveyor drives by 30 CFR 75.1101—Deluge-type water sprays, foam generators; main and secondary belt-conveyor drives.

—Stopping construction is specified as to the type of blocks, construction method, and coating of joints. A petition *forbids use of Kennedy stoppings and hollow core block* for stopping construction. These issues are substantially covered by existing provisions in 30 CFR 75.333—Ventilation controls.

—A special belt entry maintenance program is required by a petition, and identifies the manufacturer's recommended maintenance schedule. We believe this issue is covered by existing provisions in 30 CFR 75.360—Preshift examination at fixed intervals; 75.362—On-shift examination; and 75.400—Accumulation of combustible materials.

—Equipment considered potential fire sources in the intake escapeway are required to be equipped with fire suppression systems. These are already covered by existing provisions in 30 CFR 75.1107—Fire suppression devices.

Conditions that, based on Agency experience, are adequately addressed in the proposed rule include:

—A few petitions contain very specific language on the placement of sensors. Sensors are required to be *placed as near to the roof as feasible (efforts toward monitoring within 12 inches of the roof).* We have not included the requirement to monitor within 12 inches of the roof. We consider the requirement of 'as near the roof as feasible' in the proposed rule to be sufficient.

—Patrolling of two adjacent sensors which are inoperative is required each *30 minutes.* A complete system failure requires a one-hour period. MSHA is proposing that a one-hour period for all patrolling is sufficient.

There is one condition in some of these atypical petitions that *a directional lifeline shall be installed for the duration of the return escapeway* when return entries are utilized as alternate escapeways. Even though this issue is not germane to the safe use of belt air, we are soliciting comments on the use of lifelines in this proposed rule because the Advisory Committee recommended their use (in Recommendation Number 8).

E. Preamble Summary—Belt Entry Ventilation Review

In 1989, a committee was formed of MSHA staff to review safety questions surrounding the ventilation of belt conveyors in underground coal mines. The committee was referred to as the Belt Entry Ventilation Review (BEVR) committee. A final report issued by the BEVR committee made ten recommendations. The following discusses the recommendations and subsequent actions taken by MSHA to address the recommendations including proposed provisions included in this rule.

1. Increased emphasis should be placed on belt maintenance, belt entry clean-up, and rock dusting.

Maintenance, cleanup, and rock dusting in the belt entry are important for all mines using belt haulage. However, these items are already covered by existing regulations (§ 75.362(b)—On-shift examination and § 75.400—Accumulation of combustible materials). MSHA issued a Program Information Bulletin (P89–40) in 1989 addressing inspection of belt entries to emphasize proper maintenance and clean-up. We are not proposing any additional regulation for belt entry maintenance, cleanup, or rock dusting.

2. Emphasis should be placed on proper construction and maintenance of stoppings separating intake escapeways from other intake entries.

Again, regulations exist regarding the construction of stoppings, as well as all permanent ventilation controls (§ 75.333—Ventilation controls). MSHA issued a Program Information Bulletin (P89–35) in 1989 addressing inspection of stoppings to emphasize proper stopping construction and maintenance. The Agency believes no additional regulation is needed.

3. Sections should be designed by entry location, number of entries, or pressure differential, to enhance the protection of the intake escapeway from contamination by fires in adjacent separate entries.

The Agency agrees that mine design can provide additional benefits for protecting the intake escapeway. We believe mine operators should explore possible changes to ventilation systems. MSHA and the mine operator should work together in the mine ventilation plan approval process to address these issues. However, there are factors which will limit changes to mine ventilation system design, including methane liberation, geologic considerations, and other mine specific concerns. MSHA believes proposing regulations which dictate mine design are not needed, and thus is not proposing regulations concerning mine design.

4. Intake escapeways should be maintained free of potential fire sources unless such sources are protected by fire suppression or other acceptable devices.

Regulations finalized in 1996 (§ 75.340—Underground electrical installations) require electrical installations located in intake airways to be protected by noncombustible structures, or equipped with fire suppression. Also promulgated in 1996, regulations in § 75.380—Escapeways, prohibit the use of certain equipment in the primary escapeway, and requires the use of fire suppression on most other equipment. Proposed § 75.350(b)(4) would require the monitoring of the intake escapeway by CO sensor(s) as part of the AMS, meeting all of the requirements of proposed § 75.351.

5. Directing air inby through the belt entry and to the return through a restrictive regulator or pipe overcast does not comply with section 75.326 and should be discontinued.

This practice is no longer accepted by MSHA. We released a Program Policy Letter (P89–V–18) in 1989 stating that this practice should not be permitted because it allows belt air to ventilate working places; which was prohibited by former § 75.326.

6. Training should include all drills in communication and evacuation techniques and include precautions to be taken for escape through smoke.

Existing § 75.383—Escapeway maps and drills, requires mine evacuation drills and serves as a training tool for miners. Training issues have been addressed in the proposed regulations for all miners, and is required to be included in Part 48 training programs for new miners, annual retraining, and specific training for AMS operators. Training in smoke has been conducted and is available for many groups by the National Mine Safety and Health Academy in Beaver, West Virginia. MSHA's experience and the feedback from groups participating in this training has been very positive.

While this training is available at the MSHA facility, it is not possible for all companies to train all miners in smoke, as other facilities are not readily available. We are not proposing new regulations in this area. We do expect that training plans will provide mine-specific training applicable to local conditions and concerns.

7. Belt entries used to ventilate working places should be equipped with carbon monoxide monitoring systems or smoke detectors. MSHA and the Bureau of Mines should encourage development and testing of improved smoke detectors. MSHA should initiate the development of performance standards for CO monitors and smoke detectors. MSHA should continue to stress maintenance of CO monitoring systems.

The proposed regulations require the use of an AMS to monitor the belt entry. MSHA participated in a joint program with the former Bureau of Mines and a manufacturer of smoke detectors that tested these instruments in the mine environment. MSHA is encouraging the development of new technology for fire detection and supports further research by NIOSH in this area. Rather than develop approval schedules, we have decided to require sensors to be listed by nationally recognized testing laboratories.

8. MSHA should consider requiring improvements to or replacement of point-type heat sensors.

We would require the use of an AMS as a condition to safely use belt air to ventilate the working section. This is a cornerstone of the proposed rule.

Point-type heat sensors (PTHSs) or equivalent are currently required under existing § 75.1103–4(a)(1) as part of the automatic fire sensor and warning device systems. The proposed rule will allow mine operators to use CO sensors in place of PTHSs as an equivalent method.

9. Where belt air is directed outby from the section, water lines should be relocated from the belt to a separate intake entry to facilitate fire fighting activities.

Because this is not a belt air issue, we have not included any requirement in this proposed rule.

10. Further research should be conducted to evaluate the impact of air velocities on underground fire fighting and to provide information on the growth and spread of mine fires involving materials other than conveyor belts.

Additional research was completed by the former Bureau of Mines and NIOSH in these areas subsequent to the release of the BEVR report. MSHA used much of the published results in developing this proposed rule. Additional research by NIOSH concerning fire detection is ongoing, and the Agency remains in contact with researchers on new and developing technology.

IV. Discussion of the Proposed Rule

A. General Discussion—30 CFR, Part 75, Subpart D—Ventilation

Existing § 75.350 (Air courses and belt haulage entries) requires that entries used as intake and return air courses be separated from belt haulage entries and prohibits air coursed through belt entries from ventilating working places. The proposed rule would continue to allow the existing method of ventilation where belt air is coursed to a return air course or to the surface and not onto either the working sections or equipment setup or removal areas. However, it also would permit, with additional safeguards, the use of belt air to ventilate the working sections and the setup or removal areas.

Past practice has been for a mine operator to file a petition for modification of § 75.350 (or formerly § 75.326) to seek approval to use belt air to ventilate working places in underground coal mines. To date, we have granted approximately 90 such petitions. About nine petitions are being processed as of the date of this notice. Under existing § 75.350 (Air courses and belt haulage entries), mines opened on or before March 30, 1970, may use belt air to ventilate working places when it is determined that this air is needed to provide adequate ventilation. Currently, eight mines developed before 1970 are ventilated in this manner. In each of these cases, we require the mine operator, through the mine ventilation plan, to continue to meet at least the same level of protection provided in petitions that we have granted. Therefore, the mines developed before 1970 will not be exempted from the rule but must meet the new regulations.

Our experience regarding belt air petitions has been that with proper safeguards, allowing belt air to ventilate working places (belt air) can achieve net safety benefits. Belt air usage can result in an increase in the quantity of air in the belt entry and other common entries (belt air course). This provides increased protection to miners against hazards created by elevated levels of methane, other harmful gases, and respirable dust. Significantly, this method of ventilation can help to balance pressures between air courses in the system. Present § 75.350, that is identical to the former § 75.326, requires that the mine operator ''limit the velocity of the air coursed through belt haulage entries to the amount necessary to provide an adequate supply of oxygen in such entries and to assure that the air therein shall contain less than 1.0 volume per centum of methane.'' In the past, mine operators regulated the air flowing through the belt air course such that most of the air flowing toward the working sections flowed in the intake air course. This action commonly caused pressure differentials to occur between the entries. Balancing the air volume in the primary intake air course with the air volume in the belt air course generally provides less pressure differential between the primary escapeway intake air course and the belt air course. Pressure-balanced ventilation systems reduce the likelihood that air will leak from the belt air course into adjoining intake air courses, including the primary escapeway. Should a fire develop in the belt entry or other common entries, the products of combustion would tend to stay in the belt air course for a longer duration. This would enhance escape through the primary escapeway by keeping the parallel primary escapeway free of smoke.

We recognize the problems created when the products of combustion from a fire are transported to the working sections. However, we believe, as did the Advisory Committee, that with proper precautions, belt air can be safely used to ventilate working places.

The Advisory Committee recommended that lifelines be installed and maintained in all escapeways. The Advisory Committee heard testimony from several members of the industry to the effect that lifelines are beneficial. However, they also heard that lifelines placed in active entries were quickly destroyed due to normal mining activities and that repair was not considered a priority. Therefore, we have not included a requirement for life lines in the proposed rule. We specifically solicit comments on the need for and the maintainability of lifelines in escapeways.

The Advisory Committee recognized the importance of protecting the ''integrity of the atmosphere'' in the primary escapeway. In addressing this issue, the Advisory Committee report states, ''The Committee believed that it is desirable, even during normal operation of the mine, to maintain the integrity of the mine atmosphere in the escapeways by providing a positive pressure differential between the escapeways and the adjacent entries.'' We agree with the concept that separation of the belt air course from the primary escapeway is essential in providing miners a safe route to the surface. One method to help accomplish this would be to maintain the primary escapeway at a pressure that is higher than the adjacent entries. However, the Advisory Committee recognized that, sometimes, it may be difficult to always maintain the pressure differential in the proper direction. Because of the difficulty of maintaining the primary escapeway at a higher pressure than an adjacent air course, the Agency has decided not to propose this requirement. However, we recommend that MSHA and the mine operator should work together during the mine ventilation plan approval process to address this issue on a mine-by-mine basis.

The Advisory Committee recommended that we proceed to

develop regulations for improved fire-resistant belting including new testing and approval schedules. These issues were placed in a separate rulemaking and are not included in this rulemaking package as discussed above.

Existing § 75.351 (Atmospheric monitoring system (AMS) established performance requirements for AMSs used to comply with existing §§ 75.323 (d)(1)(ii)—Return air split alternative, 75.340(a)(1)(ii) and 75.340(a)(2)(ii)—Underground electrical installations, or 75.362(f)—On-shift examination. The proposed rule would revise § 75.351 to include requirements for the installation and operation of an AMS in belt entries. The Advisory Committee concluded that belt air course could be safely used to ventilate working places of underground coal mines, provided additional safety and health conditions are met. One additional condition is the presence within the belt entry of an early-warning fire detection system. This position is consistent with the conclusion of the BEVR Committee that ''Directing belt air to the face provides protection equivalent to other ventilation methods which comply with § 75.326 [now § 75.350], provided a carbon monoxide (CO) or other improved monitoring system is used.'' It is also consistent with our position since 1978 requiring the use of a low-level CO detection system when we grant a petition to use belt air to ventilate working places.

B. Section-by-Section Discussion

Part 75—Mandatory Safety Standards—Underground Coal Mines

Section 75.301 Definitions.

This proposed rule would add six new definitions to the list of definitions contained in the existing standard. As with other definitions in this section, the new definitions would only apply to subpart D—Ventilation.

The proposed rule would define *appropriate personnel* as the person or persons designated by the operator to perform specific tasks in response to AMS signals under § 75.351.

The proposed rule would define an *atmospheric monitoring system (AMS)* as a network consisting of hardware and software capable of measuring atmospheric parameters, such as carbon monoxide and methane concentrations, and smoke optical density; transmitting the measurements to a designated surface location; providing alert and alarm signals to designated locations; processing and cataloging atmospheric data; and providing reports that can be used in the maintenance and calibration of the system by the mine operator. We believe that each of these capabilities is important and that an AMS used to comply with the requirements of the standard provides these functions.

The proposed rule would define the *AMS operator* as the person(s) designated by the mine operator and located on the surface of the mine to monitor the AMS signals and to notify appropriate personnel in response to a malfunction, alert, or alarm signal. The Advisory Committee recommended that this person also be responsible for initiating procedures contained in the mine's fire fighting and evacuation plan. During discussions of the duties of the ''responsible person,'' the Advisory Committee characterized this person as ''responsible for monitoring the system and, hence, initiating the Fire Fighting and Evacuation Plan.'' Some members of the Advisory Committee noted that this individual was responsible for the safety of the miners in the mine. Other members of the Advisory Committee, as well as testimony by some members of the public, argued that the responsibility for the safety of the miners rests elsewhere and not solely with the person monitoring the AMS on the surface. We believe that, although the AMS operator could be the person designated to initiate the actions of the approved program of instruction (*i.e.*, the mine emergency evacuation and firefighting plan), this rule should not require that person to be the person in charge of implementing the approved program of instruction. Instead, the individual responsible for initiating actions specified in the fire fighting and evacuation plan should be identified in the approved program of instruction (§ 75.1502).

MSHA includes a definition for the *belt air course* in the proposed rule. The belt air course would be defined as containing the entry in which a belt is located and any adjacent entry(ies) not separated from the belt entry by permanent ventilation controls, including any entries in series with the belt air course, terminating at a return regulator, a working section, or the surface. The proposed rule deals with the belt air course and not just the belt entry due to the homogeneity of the airstream within the air course.

The proposed rule would define *carbon monoxide ambient level* as the average concentration in ppm of CO detected in an air course containing CO sensors. This average is representative of the composition of the mine atmosphere over a designated period of mining activity during a non-fire condition. We believe that an effective early-warning fire detection system must be based upon reasonable operating parameters, which include the evaluation of ambient CO levels.

The definition of ambient level includes the term 'average concentration.' The ambient CO levels will vary from mine to mine. For this reason, the ambient level and the method used to determine it, are required to be approved in the mine ventilation plan. Documentation must be provided to the district manager that the specified ambient level requested reflects the true conditions of the atmosphere. For many mines, the average concentration will be the same throughout the air course and will be at or near zero ppm. A mine may choose to designate its ambient level as zero ppm though the average concentration might be above zero ppm. There may be more than one ambient level per mine. We recognize that in some mines, CO occurs naturally as a characteristic of the coal seam and that higher average concentrations will exist. Also, diesel-powered equipment produces CO when operating and thus will raise the average concentration of the CO within the air course. Operation of diesel-powered equipment near a CO sensor might cause 'spike' concentrations of CO to occur. In-mine tests have shown that these spikes account for a small part of the sample concentrations. Thus, if the ambient level is determined using a reasonable duration of time, the average will represent the concentration approximating that most often found in the air course.

In order for an AMS with CO sensors to be effective as an early-warning fire detection system, the ambient level must represent conditions over a broad range of mining activities. We recognize that the ambient level may vary from shift to shift depending on the type or amount of work being done. We believe approval of the ambient level and the method used to establish it are most appropriately addressed in the mine ventilation plan due to varying mining conditions and activities. Therefore, MSHA would continue to require that the ambient level and the method for determining the ambient level be specified and approved in the mine ventilation plan, § 75.371(hh).

For clarity, we are proposing a definition for *point feeding.* As defined by the proposed rule, point feeding would be the process of providing additional intake air to the belt air course from another intake air course through a regulator. It is our experience that point feeding from one intake air course to another is an effective tool for controlling the proper pressure differentials between entries. This is a useful tool that limits leakage from one

air course to other air courses. Sometimes providing additional air to the belt air course to increase air velocity in the belt entry is necessary to maintain the needed air velocity to assure that the contaminants reach the sensors. Although we acknowledge that point-feeding may be necessary, we think that the number of point-feed regulators should be kept to a minimum to maintain the integrity of the primary escapeway. Because the point-feed regulator is a permanent ventilation control, the point-feed regulator must be constructed according to the requirements of existing § 75.333(e)(1) (Ventilation controls) which states the method and material requirements for the construction of permanent stoppings and regulators.

Section 75.350—Belt Air Course Ventilation

This proposed rule would revise existing § 75.350 that prohibits air coursed through belt entries from ventilating working places. As used in the existing standard, the term 'belt entries' refers to the belt air course. Under the proposed rule, the belt air course could be used to ventilate working sections, if the mine operator meets specified safety precautions. The term 'working sections,' and not 'working places,' is used in the proposed rule to include the area inby the loading point. Existing § 75.380(g) requires separation of the primary escapeway from the belt entry beginning at the working section to the escape facilities or the surface. Thus, if the mine operator wishes to course belt air inby the end of the separation of the primary escapeway from the belt, the safety precautions of this proposed rule would apply.

The proposed rule also would permit belt air to be used to ventilate equipment setup or removal areas if the mine operator meets the same specified safety precautions. If intake air passes through a belt entry where the belt is not operating, and is coursed onto a setup or removal area, the specified precautions would not apply. For example, during longwall setup, stoppings are removed to access the belt entry at certain locations. If the belt cannot be operated, the specified precautions are not required. However, if any of the air that passes through the belt entry has passed over a belt that is being operated or has been operated within the previous four hours, the specified requirements would apply.

Separation of the belt entry from the primary escapeway entry is required by existing § 75.380(g). Under the current regulations, the belt air course must be separated with permanent ventilation controls from return air courses and from other intake air courses. Section 75.350(a) of the proposed rule would require separation of the belt air course from return air courses and other intake air courses with permanent stoppings. It requires that the belt air course cannot be used as a return air course. It also requires that belt air cannot be used to ventilate the working sections or setup or removal areas except as specified in proposed § 75.350(b). When the mine operator meets the conditions specified in § 75.350(b), separation of the belt air course from intake air courses, other than primary escapeways, would not be required.

Since existing § 75.321 requires that the oxygen level in areas where persons work or travel be no less than 19.5 percent, we have not included a minimum oxygen requirement in this section. Also, existing § 75.323(b) limits the methane in intake air courses, including belt air courses, to 1.0 percent, so we have not included this requirement in proposed § 75.350.

Existing § 75.350 requires that the air velocity in the belt entries be limited to the amount necessary to provide an adequate supply of oxygen in these entries and to assure that the air contains less than 1.0 percent methane. We have not included in the proposed rule the provision in existing § 75.350 that limits the air velocity in the belt entry. The intent of this restriction was to reduce fanning and propagation of flames in the event of a fire. Donald Mitchell, a mine fire expert, commented in written testimony to the Advisory Committee that limiting the velocity in the belt entry actually does not produce the intended results. Research has shown that higher velocities have a cooling effect on developing fires, and higher quantities reduce concentrations of volatile gases. In effect, the restriction of velocity creates additional potential hazards of smoke rollback, methane and hydrogen layering, and development of fuel-rich fires. We agree with Mr. Mitchell's conclusions and have not retained the requirement limiting the velocity in the proposal.

For mines using an AMS with CO sensors for fire detection in the belt entry, proposed § 75.351(e)(3) would require a minimum velocity of 50 feet per minute (fpm) in the belt entry unless the spacing is reduced to 350 feet between CO sensors, in which case, the velocity can be lower. Our experience shows that for an AMS with CO sensors to function properly as an early-warning fire detection system, the products of combustion must be transported to the sensors. This method of transport is the ventilation air current. The Advisory Committee concluded that a minimum air velocity of 50 fpm is necessary to ensure timely transport of combustion products to sensors. However, more recent research conducted by the National Institute of Occupational Safety and Health (NIOSH) indicates lower velocities can be used if sensor spacing is reduced. In zero-flow conditions, NIOSH has found sensor spacing of 105 meters (344 feet) to be effective for early-warning fire detection (Edwards *et al.* 1997). We recognize that mines will have some air flow within the belt entries. Therefore, we are requiring that maximum sensor spacing be reduced to 350 feet in areas where less than 50 fpm is maintained to provide adequate fire protection capabilities.

Proposed paragraph § 75.350(b) addresses the safety requirements that would apply when belt air is used to ventilate a working section or a setup or removal area. Proposed paragraph (b)(1) would require that the mine operator equip the belt entry with an AMS installed, operated, examined, and maintained as specified in proposed § 75.351. The Advisory Committee concluded that if installed, calibrated, and maintained properly, an AMS with CO and/or smoke sensors can perform satisfactorily. This conclusion is consistent with our experience with AMSs.

Proposed paragraph (b)(2) of the proposed rule would require the training of all miners annually in the basic operating principles of the AMS, including the actions required in the event of activation of a system alarm. This training may be conducted as part of a miner's part 48 new miner training (§ 48.5), experienced miner training (§ 48.6), annual refresher training (§ 48.8), or training conducted as part of the approved program of instruction, § 75.1502. The training should include the purpose of the system, the type of information that it provides, and what responses are necessary to specific signals from the AMS. We are aware that the effectiveness of any hazard warning system depends not only on the reliability of the system but also on the trust that the miners have in the system. A system that continually provides alarms when no hazard is present is of little value. The Advisory Committee concluded that if miners do not understand how the AMS works or do not trust the signals produced, the effectiveness of the AMS is reduced. Consequently, the Advisory Committee recommended, and we are proposing, that miners must be trained in how to respond to AMS signals when an AMS

is installed in mines that use belt air to ventilate working sections or setup or removal areas.

Proposed paragraph (b)(3) would require that the concentration of respirable dust in the belt air course must be maintained at or below 1.0 mg/m³ because it is now considered intake air. A permanent designated area (DA) for dust measurements would be established at a point no greater than 50 feet upwind from the section loading point in the belt entry when the belt air flows over the loading point or no greater than 50 feet upwind from the point where belt air is mixed with air from another intake air course near the loading point. We would require that this DA be specified and approved in the mine ventilation plan. The Advisory Committee recommended the establishment of DAs at appropriate locations. Establishing a DA near the loading point or before the mixing point would address the concerns of Advisory Committee members for protecting the health of persons when belt air is coursed onto the working section or setup or removal areas. The existing regulation, § 70.100(b), specifies that the average concentration of respirable dust in the intake airways within 200 feet of the working faces of each section be continuously maintained at or below 1.0 mg/m³.

Proposed § 75.350(b)(4) would require monitoring of the primary escapeway per proposed § 75.351(f) for CO or smoke within 500 feet of the working section or set up or removal areas, and within 500 feet of the beginning of the panel. In mines that point-feed from the primary escapeway near the beginning of a panel, the sensor required under § 75.351(f) must be located in the primary escapeway within 500 feet of the working section and within 500 feet of the beginning of the panel. The point-feed sensor required by proposed § 75.350(c)(1) may be used as the sensor at the beginning of the panel if it is located within 500 feet of the beginning of the panel. Alarms activated by these sensors would warn miners of a problem in the primary escapeway upwind of the working section or setup or removal area. These sensors will provide significant additional protection for a minimal cost.

Proposed § 75.350(b)(5) is included to limit the use of belt air to sections developed using at least three entries for development. This will require all existing two-entry petition requirements to remain in effect, and these petitions will not be superceded by this rule since many of the granted petition requirements exceed those in this proposed rule. Future two-entry mines will need to continue to file petitions to use belt air, since proposed § 75.350(a) prohibits placing the conveyor belt in the return. The Agency believes the two-entry mining system provides a unique set of issues and needs to be approved on a mine-by-mine basis.

Proposed paragraph (c) would require that when a mine needs additional air in the belt air course, notwithstanding the provisions of § 75.380(g), point feeding air from any intake air course may be permitted if approved in the mine ventilation plan under § 75.370 and conditions set out in proposed paragraph (c) are met. MSHA believes that a point-feed regulator should only be used when needed and the number of point-feed regulators should be kept to a minimum. Point feeding is not meant to compensate for a poorly designed or inadequately maintained ventilation system. Although the Advisory Committee limited discussion to point feeding from the primary escapeway, we believe that any intake air course could be considered as a source for point feeding. The same requirements should apply to these other intake air courses in order to maintain the integrity of the air courses and to facilitate early-warning fire detection capability.

When point-feed regulators are used and the air in the belt air course is being used to ventilate either a working section or an area where mechanized mining equipment is being installed or removed the following conditions must be met to assure the safety of the miners.

Proposed paragraph (c)(1) would require monitoring of the air current that will pass through the point-feed regulator for CO or smoke at a point within 50 feet upwind of the point-feed regulator. Proposed paragraph (c)(2) would require monitoring of the belt air for CO or smoke at a point within 50 feet upwind of the mixing point with air from the point-feed regulator. If the sensor in the intake air stream gives an alert or alarm signal, the fire in all likelihood will be in the intake air course upwind of the point-feed regulator. If the sensor in the belt entry gives the alert or alarm signal, the source of the contaminants is most likely in the belt entry upwind of the mixing point. With this knowledge, the operator can take whatever action is appropriate to evacuate miners from the affected area safely and begin firefighting efforts.

Proper installation and maintenance of point-feed regulators, when used, are critical since they are a major component of a ventilation system. Since point-feed regulators control the flow of air between two intake air courses, the provisions of § 75.333(e)(1) (Ventilation controls) apply. Proposed paragraph (c)(3) would require that the point-feed regulator be provided with a means for remote closing without requiring persons to enter the air stream passing through the point-feed regulator. This would provide protection for those persons who may be required to close the point-feed regulator in case of an emergency. Remote closure is especially important if a fire starts in the intake air course upwind from the point-feed regulator. When the point-feed regulator is installed in the manner proposed, the person closing the point-feed regulator could approach upwind in the belt air course. This would enable the person to close the regulator without being exposed to the products of combustion coming through the point-feed regulator. By closing the point-feed regulator under these conditions, the amount of contaminants entering the belt air course could be limited, thus permitting miners to escape.

Proposed paragraph (c)(4) would require that a 300-fpm minimum air velocity be maintained through the point-feed regulator to prevent air reversals and reduce the potential for smoke rollback. The Advisory Committee considered the need to provide sufficient air quantity in the belt air course and recognized that sometimes supplying this air from the primary escapeway through a point-feed regulator may be necessary. The Advisory Committee determined that controlled point feeding is superior to ventilation of the belt air course through leakage. When point feeding is necessary, the Advisory Committee determined that point feeding from the primary escapeway into the belt air course be done under controlled conditions. In its discussion of point feeding, the Advisory Committee states, and we agree, that ''* * * while point feeding from the primary escapeway may be appropriate, point feeding into the primary escapeway from any other air course is never appropriate.'' However, we do not intend this position to change the requirement of existing § 75.380(h) which permits ventilation of the primary and alternate escapeways from a common intake air shaft or slope.

Proposed paragraph (c)(5) would require the operator to submit a mine ventilation plan that includes the location of all point-feed regulators. The installation of the point-feed regulator must comply with existing § 75.333 and must meet the performance requirement of remote closure.

In addition, proposed paragraph (c)(5) would require that the locations of

point-feed regulators must be shown on the mine ventilation map required by § 75.372 (Mine ventilation map). An accurate and complete map enables both the operator and MSHA to evaluate the ventilation system. It would also require that the operator show the locations of point-feed regulators on the escapeway map required by existing § 75.383. During escape, it is important that miners be aware of all aspects of the ventilation system that might affect their ability to exit the mine safely. Although a means for closure is required for all point-feed regulators, closing a regulator, as in making any air change during a fire, should be done only when a demonstrated need exists.

Proposed paragraph (c)(6) would require an AMS to be installed, operated, examined, and maintained as specified in proposed § 75.351 when point-feed regulators are used. This requirement would greatly increase protection for miners by increasing the level of atmospheric monitoring of areas where intake air crosses into a belt air course, thereby increasing the ability of the system to detect hazards before they can develop into serious threats.

Section 75.351 Atmospheric Monitoring Systems

This proposed standard sets out the installation, location, examination, maintenance, and operational requirements for AMSs. The Advisory Committee concluded that air in the belt air course could be safely used to ventilate working places if the mine operator meets certain conditions. The primary condition is the use within the belt entry of ''* * * a reliable and properly specified, installed, calibrated, and maintained Atmospheric Monitoring System * * *'' [Advisory Committee report, Page i]. The proposed standard sets out the requirements implementing that part of the Advisory Committee recommendation concerning the installation, calibration, and maintenance of the AMS to assure its reliability. The proper operation of an AMS is the keystone around which the safe use of belt air, and other provisions in this proposed rule, is based. We believe that current AMS technology is reliable. Since 1975, the year when an AMS was first required as a condition for the granting of a belt air petition, we have included performance criteria for an AMS as part of each petition granted. As AMS technology has evolved, the performance requirements in the granted petitions have also evolved. Performance requirements are included in this proposed standard.

Proposed paragraph (a) would require proper AMS operation. Whenever personnel are underground and an AMS is used to fulfill the requirements of §§ 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 AMS must be operating and a designated AMS operator must be on duty at a location on the surface of the mine where signals from the AMS can be seen or heard and the operator can promptly respond to these signals.

Proposed § 75.351(a) would require that an AMS installed in accordance with §§ 75.350(b) or 75.350(c) monitor the mine atmosphere at all times that a belt air course is used to provide intake air to a working section or an area where mechanized mining equipment is being installed or removed and miners are underground. In general, this requirement is independent of belt operation or coal production on affected sections. An exception to §§ 75.350(b) or 75.350(c) would be when the belts are not operated and coal is not produced after a period exceeding 24 hours. Activities included in this exception are a production shut-down to complete non-production work (dead work) for several days or temporary mine closures due to market conditions, vacations, *etc.* However, it is recognized that normally it would be an advantage to the operator to keep the AMS operating at all times.

Our experience is that many fires in belt entries start after the belt is stopped. As discussed previously, a review of the reports of reportable belt entry fires confirms this. The 24-hour period is included in the proposed rule to address these concerns after a belt shut-down and to address extended idle periods when the likelihood of a belt fire diminishes. The four-hour period that is found in most current petitions for modification is being replaced with this more stringent requirement that the belt be monitored for 24 hours after the belt is shut down. This requirement is not intended to superceded the requirements in § 75.1103–4(e). The AMS must be operating and in compliance with §§ 75.350(b) and 75.350(c) one hour prior to restarting the belt.

This approach is consistent with the belt air petitions and the recommendations of the Advisory Committee. The proposed requirement is similar to existing § 75.351(d)(1), which requires a person designated by the operator be at the surface location while anyone is underground. This proposed requirement clarifies when the AMS must be operable and when the AMS operator must be at the designated surface location.

Proposed § 75.351(b) would require the operator to designate a surface location at the mine for receiving signals from the AMS sensors or at another location approved by the district manager, and provide an AMS operator to respond to those signals when the system is used to comply with existing §§ 75.323(d)(1)(ii) (Actions for excessive methane, Return air split alternative), 75.340(a)(1)(ii) or 75.340(a)(2)(ii) (Underground electrical installations), or 75.362(f) (On-shift examination), and proposed §§ 75.350(b) or 75.350(c) (Belt air course ventilation). This would allow the district manager to address situations where there are multiple mines in close proximity in one area to share one designated surface location that would provide the same degree of effective monitoring and early-warning protection.

As with the existing standard, under paragraph 75.351(b)(1) of the proposed rule, the responsible person would have access to two-way voice communication with persons at working sections, at setup or removal areas, and at other areas included in the approved program of instruction, § 75.1502. These areas would be equipped with two-way communication in accordance with existing § 75.310(a)(3). These other areas may include belt drives, belt transfer points, underground dumps, and underground shops. We do not intend it to mean areas where persons are assigned to work on a temporary basis, such as areas where miners are installing auxiliary supports or where they are making repairs to track haulage systems.

Proposed paragraph (b)(2) would require the operator to designate an AMS operator to monitor the AMS output and be at a location on the mine surface where all AMS signals can be responded to promptly. Proposed paragraph (b)(3) would require the posting at the surface location of an up-to-date map or schematic showing air flow directions and the location and type of all AMS sensors. The map or schematic could be displayed or stored in the AMS computer and retrieved when needed. By posting an up-to-date map showing the locations and types of AMS sensors and the intended air flow direction, the responsible person will be better able to identify the affected areas of the mine. The proposed requirement is similar to the requirement in existing § 75.351(d)(1) requiring the posting of a mine map showing the underground monitoring system at a surface location. We would require the AMS operator to notify appropriate personnel in response to a malfunction, alert, or alarm signal. The AMS operator could be the person initiating the approved program of instruction or could notify the responsible official for initiating the

plan. Mine operators are encouraged to send information from the AMS to alternate locations, either on or off mine property, so long as the original signal goes to the designated surface location. The AMS operator, designated by the mine operator, must be on duty while anyone else is underground and the monitoring requirements of existing §§ 75.323(d)(1)(ii) (Actions for excessive methane, Return air split alternative), 75.340(a)(1)(ii), or 75.340(a)(2)(ii) (Underground electrical installations), or 75.362(f) (On-shift examination) apply. This proposed requirement also would apply to proposed §§ 75.350(b) or 75.350(c) (Belt air course ventilation). Proposed § 75.351(b)(3) is also consistent with our long held position as reflected in petitions requiring the use of an AMS.

Proposed § 75.351(b)(4) would require that the names of the designated AMS operators; appropriate personnel, such as section foreman, maintenance foreman, mine manager, and safety director; the responsible person referred to in proposed § 75.352, and the method to contact these persons must be provided at the designated surface location. This will provide a means for any person to promptly contact the appropriate personnel in the event of an emergency.

Proposed paragraph (c) would establish minimum operational requirements for an AMS installed in accordance with existing §§ 75.323(d)(1)(ii) (Actions for excessive methane, Return air split alternative), 75.340(a)(1)(ii), or 75.340(a)(2)(ii) (Underground electrical installations), or 75.362(f) (On-shift examination). Proposed paragraph (c) also would apply to proposed §§ 75.350(b) or 75.350(c) (Belt air course ventilation). As recommended by the Advisory Committee, proposed paragraph (c)(1) would require that the AMS monitor and provide a signal at the designated surface location for any interruption of circuit continuity or any electrical malfunction of the system. Proposed paragraph (c)(1) would require the system to identify, at the designated surface location, the operating status of all sensors. As discussed previously, when an AMS is used, it is an integral part of the overall safety program for the mine. It is important that the AMS operator be aware of the status of the system. Without this knowledge, the AMS operator cannot appropriately respond to alert and alarm signals from the system. As such, it is imperative that it is in proper operating condition or that the operator know when it is not operating properly so that remedial measures can be started. By having a self-monitoring system, this information is more readily available and the operator can notify appropriate personnel.

Proposed paragraph (c)(2) would require that the AMS automatically provide an alert signal at the designated surface location that is distinguishable from an alarm signal, when the CO or methane concentration reaches the established alert level. The proposed rule requires that the AMS operator notify responsible persons. It is essential that this individual is immediately aware of the existence of an alert condition.

MSHA has developed a tiered response approach to address malfunction, alert, and alarm signals in order to require appropriate reaction by the AMS operator and miners. Malfunction and alert signals are addressed in a similar manner in this proposed rule. It is important to determine the cause of either the malfunction or alert signal and to correct it as soon as possible. The AMS operator must be able to tell, by sight or sound, if a signal is the result of a malfunction, alert, or alarm in order to respond correctly to the situation. Signals can be modified by assigning different tones or lights to the different signals so that the AMS operator can easily distinguish them in order to appropriately respond. Alarms on sections must be discernable by sight or sound by the miners so that appropriate actions outlined in the approved program of instruction can be started (§ 75.1502).

MSHA proposes paragraph (c)(3) to require signals that can be seen and heard by the AMS operator at the designated surface location when the CO, smoke, or methane concentration at any sensor reaches the alarm level as activated automatically at the designated surface location. This is consistent with the recommendation of the Advisory Committee. This proposed provision would require giving a visual and audible signal for any alarm condition, including CO, smoke, and methane. It also would trigger initiation of the actions specified in §§ 75.352(a)(2) and 75.352(a)(3).

By requiring notification at the surface location and underground, the proposed rule provides a degree of redundancy that will increase the likelihood of notification and speed up response to the alarm. MSHA has included this requirement in recent approved belt air petitions for modification and it has been successful in increasing the response to alarm signals.

In addition, proposed paragraph (c)(4) would require that the alarms be given at all affected working sections and areas where miners can see and hear the signals. The intent of this requirement is to assure that the AMS provides the required signals notifying miners of hazards. The Advisory Committee heard considerable testimony about problems associated with notifying persons on affected working sections during the Marianna mine fire. Consequently, the Advisory Committee recommended, and this proposed rule would require in paragraph (c)(4), that alarms be given at locations where they can be seen and heard by affected miners.

Proposed paragraph (c)(4) would also require that when methane alerts (1.0 %) and alarms (1.5%) are used that these signals be distinguishable from all other alert and alarm signals. Because elevated levels of methane may pose a significant explosion hazard, it is essential that miners are immediately aware that the alarm being given is the result of an elevated methane concentration.

Proposed paragraph (c)(5) would require that the AMS automatically provide an alarm signal that can be seen and heard by miners in other locations, such as underground shops and track maintenance locations, as specified in the approved program of instruction (§ 75.1502). Proposed paragraph (c)(6) would require that the AMS identify the operational status of all sensors at the designated surface location.

Proposed paragraph (d) would specify the location and installation requirements for AMS sensors. Proposed paragraph (d)(1) would require that AMS sensors be in the airstream they are intended to monitor to assure measurements are representative of the entry atmosphere. This provision ensures the positioning of sensors to detect a hazardous condition should it develop. For example, where an electrical installation is monitored to comply with §§ 75.340(a)(1)(ii) or 75.340(a)(2)(ii), the sensor should be positioned downwind in the airstream used to ventilate that installation. This is to provide the maximum potential for fire detection, since the products of combustion are going to follow the air current.

Proposed § 75.351(d)(2) would require installation of CO or smoke sensors near the center of the entry as near the roof as feasible in a location that would not expose personnel working on the system to unsafe conditions. This requirement is necessary to make certain that sensors are placed away from machinery, such as the conveyor belt itself, that could be a hazard to miners working on the AMS.

Proposed § 75.351(d)(2) specifies that operators not install sensors in abnormally high areas or in other locations where air flow patterns do not permit products of combustion to reach the sensors. This proposed requirement was developed based on work conducted by the former U.S. Bureau of Mines (USBM) and Agency experience with existing belt air petitions. This work has shown that during both smoldering and open combustion fires, the products of combustion stratify. The highest concentrations are found near the mine roof. Accordingly, the former USBM recommended installing sensors near the roof of the entry to take advantage of this stratification. Our experience shows that when operators do not properly position sensors, heatings or fires can go undetected or their detection can be delayed. For example, sensors that are positioned behind posts or equipment will not be exposed to the products of combustion contained in the air stream.

Proposed paragraph (d)(3) requires that methane sensors be installed near the center of the entry at least 12 inches from the roof, ribs, and floor. Existing § 75.351(b)(2) failed to specify the location of the sensor in relation to the roof, ribs, or floor. This proposed paragraph adds this requirement paralleling the requirement of § 75.323(a) for conducting methane tests. Section 75.323(d)(1)(ii) requires the use of an AMS when using the return air split alternative. The proposed rule also requires installation of methane sensors near the center of the entry in a location that would not expose personnel working on the system to unsafe conditions.

Proposed paragraph (e) specifies the locations along the belt entry where the operator must install sensors to monitor for CO or smoke. Paragraph (e)(1) requires a sensor at or near the working section tailpiece. This sensor is to monitor the belt and it is not intended to monitor the section tailpiece or feeder. The tailpiece area is visited frequently and a sensor hung over the loading point would be subject to being damaged. The sensor must be installed in the air stream ventilating the belt entry. In longwall mining systems using belt air to ventilate the working section, proposed paragraph (e)(1) requires that the sensor near the tailpiece be located in the belt entry at a distance of no more than 150 feet upwind from the mixing point where intake air is mixed with belt air at or near the tailpiece. This requirement would monitor the belt up to the point that intake air flows into the belt entry mixing with belt air. It is not intended to monitor the stage loader since the tailpiece is often attended by miners, therefore, miners would be in the area and aware of any sign of a fire.

Proposed paragraph (e)(2) requires that a sensor be located immediately upwind, a distance of no greater than 50 feet from the point where the belt air course is combined with another air course or splits into multiple air courses. This would require placing a CO or smoke sensor in the belt entry (*i.e.,* main belt entry) just before the air stream splits to ventilate another belt entry (*e.g.,* a panel belt). Also, if two belt air splits join, this paragraph would require a sensor in each air split immediately prior to joining. These sensors are required to promptly identify the location of a fire in either air split and would more precisely show the location or air split where the fire originated.

Proposed paragraph (e)(3) would require sensors to be installed at intervals not to exceed 1,000 feet along each belt entry in areas where air velocities are maintained at 50 feet per minute or higher. The 1,000-foot spacing is consistent with the Advisory Committee recommendation, Agency experience under the petition process, and research conducted by NIOSH and the former U.S. Bureau of Mines. Also, in areas where air velocities are maintained at less than 50 fpm, the sensor spacing must not exceed 350 feet. In areas where the air velocity in the belt entry is maintained at less than 50 fpm, the sensor spacing must be reduced to 350 feet.

Proposed paragraph (e)(4) requires a sensor be placed not more than 100 feet downwind of each belt drive unit, each tailpiece transfer point, and each belt take-up. If the belt drive, tailpiece, and/or take-up are installed together in the same air course they may be monitored with one sensor located not more than 100 feet downwind of the last component. This requirement is consistent with current petitions. It is intended to monitor the drive area, a potential fire source because of dust accumulations and electrical equipment.

Proposed paragraph (e)(5) would allow the district manager to require additional sensors as mine conditions warrant. As belt drive configurations often require altering the belt entry, additional sensors may be required in this area. Also, other areas may require additional monitoring due to unusual entry shape or air flow patterns. The location of additional sensors must be specified in the mine ventilation plan. The Advisory Committee recommended the installation of a CO sensor at the inby end of the section track if the belt and track are in separate entries of the same air course. However, we are proposing to allow the district manager flexibility in determining the appropriate location for placement of the sensors. Paragraph (e)(5) would allow the district manager to require additional sensors in any entry that is part of the belt air course.

Paragraph (f) specifies the location of sensors in the primary escapeway. If used to monitor the primary escapeway under § 75.350(b)(4), CO or smoke sensors would be located in the primary escapeway within 500 feet of the working section and within 500 feet inby the beginning of the panel. The point-feed sensor required by § 75.350(c)(1) may be used as the sensor at the beginning of the panel if it is located within 500 feet inby the beginning of the panel. Under this situation, only one sensor would be required to comply with both of the requirements.

Paragraph (g) specifies the location of sensors in return air splits. Proposed §§ 75.351(g)(1) and 75.351(g)(2) retain the requirements in existing §§ 75.351 (b)(1) and 75.351(b)(2) for monitoring return air splits using an AMS. Monitoring in returns where auxiliary fans are used is addressed in proposed § 75.351(g)(2). Proposed paragraph (g)(2) would require an AMS to monitor the mine atmosphere for percentage of methane at two locations. Proposed § 75.351(g)(2)(i) states that in the return air course opposite the section loading point, or, if exhausting auxiliary fan(s) and tubing are used, in the return air course no closer than 300 feet downwind from the fan exhaust and at a point opposite or immediately outby the section loading point. Proposed § 75.351(g)(2)(ii) would require that the mine atmosphere be monitored immediately upwind from the location where the split of air meets another split of air or immediately upwind of the location where the split of air is used to ventilate seals or worked-out areas. Placing methane sensors at these locations monitors the methane concentration near the beginning and the end of the immediate return. The AMS must provide an alarm when either sensor reaches 1.5 percent methane. This is the concentration specified in proposed § 75.351(i)(1) that corresponds to the methane action level specified in the existing § 75.323(d)(2) and provides adequate monitoring of the return.

Proposed § 75.351(h) retains the requirement of existing §§ 75.340(a)(1)(ii) and 75.340(a)(2)(ii). Existing § 75.351(c) addresses AMS monitoring of underground electrical

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

provisions should be provided for permitting CO alert and alarm levels greater than 5 and 10 ppm. One member of the Advisory Committee suggested that there may be times when the 5 and 10 ppm levels are not ''practical,'' such as in mines using diesel-powered equipment which tend to have higher levels of CO in the air from the combustion of diesel fuel. Diesel-discriminating sensors have proven to be effective in reducing the frequency of false alert and alarm signals which are not the result of fire, but which are due to diesel exhaust. These sensors can allow operators to improve fire detection capabilities by lowering alert and alarm levels. Therefore, MSHA is proposing to limit CO alert and alarm levels to 5 and 10 ppm above ambient, respectively.

The proposed rule, consistent with the Advisory Committee recommendation, does not provide for approving alert and alarm levels for CO sensors installed in accordance with § 75.350(b)(1) greater than 5 and 10 ppm above the ambient level, respectively. This flexibility is not needed because the specified alert and alarm levels are above the ambient level, and because the proposed rule permits the use of time delays or other techniques to reduce non-fire related alert and alarm signals. Although one member of the Advisory Committee believed that higher alert and alarm levels may be more ''practical,'' we do not believe that they provide the protection that is necessary to protect miners by giving them early warning in the case of a fire.

Proposed paragraph (i)(3) would establish alert and alarm levels when an AMS is used to conduct methane tests required by § 75.362(f). It would require the AMS to provide an alert signal at no more than 1.0 percent and an alarm at no more than 1.5 percent methane. This is consistent with the action levels stipulated under existing §§ 75.323(c)(1) and 75.323(c)(2) for methane in the immediate return. Since § 75.323(c) requires specific actions at these concentrations, personnel will receive timely notification with these alert and alarm levels. The proposed rule does not preclude the mine operator from using alert and alarm levels that are lower than those required by the proposed rule.

Proposed § 75.351(j)—Establishing CO ambient levels, would require that CO ambient levels and the means to determine these levels must be approved in the mine ventilation plan (§ 75.371(hh)) for sensors installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), and 75.350(c). In order for an AMS with CO sensors to be effective, the ambient level must represent conditions over a broad range of mining activities. We recognize that the ambient level in the mine may vary because of mining conditions and activities. Since mining activities vary from mine to mine, we believe the mine ventilation plan is the most effective tool to set the ambient level. Therefore, the Agency chooses to continue the requirements contained in the petitions for modifications that the ambient level, and the method for determining the ambient level, be specified and approved in the mine ventilation plan. This provides flexibility by allowing more than one ambient level within the mine, and allowing the operator to reestablish ambient levels for some areas. Any changes in the ambient level(s) must be specified and approved in the mine ventilation plan. This is consistent with the existing rule at § 75.371(hh). Further information concerning the setting of an ambient level can be found in the discussion for the definition of CO ambient level.

Proposed paragraph (k) would require an AMS used to comply with §§ 75.323(d)(1)(ii), 340(a)(1)(ii), 340(a)(2)(ii), 75.350(b), 75.350(c), or 75.362(f) be installed and maintained by properly trained personnel. It also requires that the system be maintained in proper operating condition. The Advisory Committee recognized, and we agree, that proper functioning of an AMS is directly related to the quality of the maintenance provided. The Advisory Committee identified and recommended requiring specific skills training for maintenance personnel, such as system operation, calibration, troubleshooting, and system repairs. In paragraph (k) we have proposed that trained personnel perform the maintenance. Although we are not proposing a requirement for a specific training plan for maintenance personnel, as we explained earlier in this preamble, this training would be conducted under existing training programs.

Proposed § 75.351(l) specifies that sensors must be listed and installed in accordance with the recommendations of nationally recognized testing laboratories (NRTLs) approved by the Secretary or be of a type and installed in a manner approved by the Secretary under the procedures outlined in our Program Policy Manual, Volume V for parts 75.1101–5 through 75.1103–5. This volume of MSHA's Program Policy Manual can be found at *http://www.msha.gov/REGS/COMPLIAN/PPM/PMVOL5J.HTM#123. See Section III.* Background for further discussion on using accuracy and performance requirements instead of proposing an approval schedule. Proposed paragraph (l) provides the requirements for CO, smoke, and methane sensors. This section is based on the existing § 75.1103–2(a) which requires components of automatic fire sensor systems in belt entries to be of a type and installed in a manner approved by the Secretary. Alternatively, the components are required to be of a type listed, and installed in accordance with the recommendations of a nationally recognized testing laboratory approved by the Secretary. This proposed rule merely expands the requirement to include methane sensors. The provision for approval by the Secretary is expected to be used for new technology, as MSHA does not have approval standards for these types of sensors. It is expected that NRTL approval of sensors will be the most prevalent vehicle for acceptance of the sensors. The NRTLs are expected to utilize American National Standards when approving or listing the sensors. A review of the standards shows that ANSI/ISA92.01 covers CO sensors; ANSI/ISA12.13 covers combustible gas detectors, including methane sensors; and ANSI/UL 268 covers smoke sensors. It is anticipated that the sensors will be compared to these standards by the NRTLs.

Paragraph (m) of the proposed rule would permit the use of reasonable time delays for preventing the alert or alarm signals from being triggered when the AMS detects non-fire produced CO. The Advisory Committee pointed out a need for reducing the number of non-fire signals to enhance miner confidence in the AMS. They suggested the use of time delays or other computer techniques to reduce the number of alert and alarm signals. MSHA has approved ventilation plans that have included time delays of up to 3 minutes. This practice is consistent with recent petitions and has effectively reduced the number of non-fire produced alert and alarm signals.

We are proposing that the use and length of the time delay be approved in the mine ventilation plan submitted under existing § 75.370. Before approval in the mine ventilation plan, a demonstrated need for time delays must be documented. The total time delay for any given sensor may not exceed three minutes. Agency experience showed this time to be the maximum delay necessary to eliminate diesel-powered generated alert and alarm signals. Consistent with the Advisory Committee report, the proposed rule also would permit other computer or administrative techniques (such as

wave-cross trending, limiting vehicular traffic, and pre-notification of actions that could produce CO to be conducted underground) for reducing the number of non-fire produced alert or alarm signals provided they are approved in the mine ventilation plan. The use of reasonable time delays and other approaches, such as diesel-discriminating sensors have been successful in reducing the number of alert and alarm signals from CO that are not a result of a fire or heating.

We do not consider the use of time delays or other computer or administrative techniques as a replacement for the proper installation and maintenance of the AMS. For example, alert and alarm signals that are the result of short duration spikes caused by radio frequency interference could be eliminated by using shielded cable. Also, if higher levels of CO result from improperly maintained diesel-powered equipment, we would expect correction of this condition per existing regulations before considering approval of a time delay.

Proposed paragraph (n) deals with the examination, testing, and calibration of sensors used as part of an AMS, and is consistent with the Advisory Committee recommendations.

The Advisory Committee recommended that sensors should be visually examined each coal producing shift. Under paragraph (n)(1) at least once each shift when belts are operated as part of a production shift, mine operators would have to visually examine CO or smoke sensors and alarms installed in accordance with § 75.350(b). We are aware of instances where operators have placed sensors in improper locations following belt moves or sensors have been damaged by roof falls or equipment. Sometimes these conditions have gone undetected. Since § 75.362(b) already requires an examination for hazardous conditions in the belt entry once each shift that the belt operates, the sensor examinations could coincide with the on-shift inspection. Paragraph (n)(1) adds the requirement that the sensors be visually examined. It is anticipated that generally this will not cause any additional time to be spent doing the on-shift belt examination. By requiring that sensors and alarms are examined visually each shift, we believe that inoperable or inappropriately placed sensors can be detected and corrected in a timely manner. Under existing § 75.363 a certified person must make a record of misplaced or damaged sensors. This provision would continue to be in effect.

Proposed paragraph (n)(2) would require testing of alarms for operation at least once every seven (7) days for an AMS installed in accordance with §§ 75.350(b) or 75.350(c). Testing of alarms is critical to assure that they will operate properly when needed. The testing method is dependent upon the type of alarm installed.

Paragraph (n)(3) would require the calibration of sensors that are part of an AMS installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), or 75.350(c) at least every 31 days. Paragraph (n)(3)(i) would require proper calibration of CO sensors with a known concentration of CO in air sufficient to activate the alarm. Paragraph (n)(3)(ii) also would require that smoke sensors be functionally tested according to the manufacturer's specifications. The nature of the functional test would be to subject the sensor to one of the following methods: ''(1) Calibrated test method, (2) Manufacturer's calibrated sensitivity test instrument, (3) Listed control equipment arranged for the purpose, (4) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit where its sensitivity is outside its listed sensitivity range, [and] (5) Other calibrated sensitivity test methods approved by the authority having jurisdiction to assure that the sensor responds properly'' (NFPA 72).

It has been our experience, and is consistent with manufacturers' recommendations, that the calibration schedule proposed is sufficient to assure proper operation. However, proposed § 75.351(k) requires that AMSs be maintained in proper operating condition. Therefore, if experience at an individual mine indicates that more frequent calibration is necessary to maintain proper operating condition, the operator must calibrate the sensor at an interval sufficient to assure that the performance required by the proposed rule is maintained. In addition, each methane sensor installed in accordance with §§ 75.323(d)(1)(ii) or 75.362(f) must be calibrated in accordance with the manufacturer's calibration specifications as in paragraph (n)(iii). Calibration must be done with a known concentration of methane in air sufficient to activate the alarm.

Paragraph (n)(4) would require certification of the accuracy of calibration gases as directly traceable to National Institute of Standards and Technology (NIST) standards. Alternatively, paragraph (n)(4) would permit traceability to an analytical standard prepared in a method traceable to NIST. This paragraph is necessary since the accuracy of the calibration gas has a direct bearing on the accuracy and functional performance of the sensor. According to NIST, traceability is ''* * *the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.'' The NIST standard is a physical standard: ''Only measurement results and values of standards are traceable. To support a claim (of traceability), the provider of a measurement result or value of a standard must document the measurement process or system used to establish the claim and provide a description of the chain of comparisons that were used to establish a connection to a particular stated reference. All of the information regarding traceability to NIST is available on-line at *http://www.nist.gov/traceability.*

Paragraph (o), consistent with an Advisory Committee recommendation, would require certain records to be maintained when an AMS is used to comply 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). Records of the type proposed provide a history of system performance and mine operator response. They are considered essential to the operation of an effective system and can be invaluable in determining sources of recurring alert and alarm signals and system malfunctions.

Proposed § 75.351(o)(1) would require that the responsible person designated by the operator maintain the following records: record of alert and alarm signals, record of malfunctions and corrective actions, record of seven day test of alert and alarm signals, calibrations, and maintenance performed on the AMS. The responsible person would create these records at the end of the shift as these situations occur. Paragraph (o)(1)(i) would require that a record be kept of all alert and alarm signal activations. The required record would include the date, time, location and type of sensor, and the cause of the activation. Proposed paragraph (o)(1)(ii) would require a record to be made of all AMS malfunctions. This record would contain the date, extent, and cause of the malfunction. It would also include the corrective action taken to return the system to proper operation. As specified by this section, the records required by paragraphs (o)(1)(i) and (ii) would be made by the responsible person.

Proposed paragraph (o)(1)(iii) would require that a record also be maintained

of the weekly test of alert and alarm signals, calibrations, and maintenance of the system. Unlike the records required by paragraphs (o)(1)(i) and (ii), the records required by paragraph (o)(1)(iii) would be made by the person(s) doing the test, calibration, or maintenance. These individuals have firsthand knowledge of how the sensors performed during their calibration and testing and any maintenance required.

Proposed paragraph (o)(2) would require the person entering the record to include their name, title, date, and signature. These records are necessary because they will document the test, calibration, and maintenance history of the AMS and will provide the operator with an overall perspective of how the AMS is operating.

Consistent with other requirements of this subpart, proposed paragraph (o)(3) would require that all records required by this section be maintained in a secure book that is not susceptible to alteration or electronically in a computer system that is secure and not susceptible to alteration. This section requires that these records be maintained separately from any other record and be easily identifiable by a title, such as the ''AMS log.''

Proposed paragraph (p) would require all records to be maintained for one year at a surface location at the mine and made would be made available for inspection by miners and authorized representatives of the Secretary. Proposed paragraphs (o) and (p) are consistent with the Advisory Committee recommendations, existing regulations, and recent petitions. This proposed section is intended to assure that these records are maintained and made available, and that the appropriate level of mine management is made aware of conditions or problems requiring attention. The proposed rule also would help to assure the integrity of records and enable mine management to review the quality of the examinations. Consistent with existing standards in this part, we intend the term ''secure and not susceptible to alteration'' when applied to electronic storage to mean that the stored record cannot be modified. One example of acceptable electronic storage would be a ''write once, read many'' file.

Proposed paragraph (q) would require that all AMS operators be trained annually in the proper operation of the AMS. MSHA believes that the training program for an AMS operator should address at least two topics. These include:

1. The hardware and software operation of the system, and

2. Provisions and requirements of the ventilation plan, fire fighting and evacuation plan, and the requirements of this rule.

The hardware training should at least include the following subjects:

1. A complete AMS overview, including orientation with the central computer system and its components, the data highway, outstations, and sensors.

2. Common system problems and diagnostic tools, as well as any special features of the system.

The software operation training should include at least the following subjects:

1. Basic computer operating systems, such as MS–DOS or Windows.

2. CMOS setup, board(s), jumper and address settings, directory and file allocation, program start-up, logging in/out of system, system shutdown and other AMS software functions.

3. Printing, editing sensor points, setting communication parameters, creating reports, and device controls.

4. Special features of the system, such as networking, graphics editing, and database management.

And, finally, AMS operators would need to be trained on the following issues:

1. The provisions and requirements of the ventilation plan, fire fighting and evacuation plan, and

2. The requirements of this rule.

A record of the content of training, the person conducting the training, and the date the training was conducted, would have to be maintained at the mine by the mine operator. This record would have to be maintained for at least one year. This training would assure that the AMS operator maintains proficiency in the operation of the AMS and the understanding of his/her responsibility under this rule.

Proposed paragraph (r) would require that when an AMS is used to comply with § 75.350(b), a two-way voice communication system, as required by § 75.351(b)(1), must be installed in a separate entry than the AMS. The ability to communicate is essential during emergency situations, such as a fire. Therefore, it is critical that at least one line of communication remain intact. In the event of a roof fall, fire, or other event in one entry that could damage either the AMS or the two-way voice communication, it is more likely that one of these systems will remain functional when installed in an alternate entry, thus providing an additional measure of protection.

Section 75.352 Actions in Response to AMS Malfunction, Alert, or Alarm Signals

The designated AMS operator or other designated person referred to in § 75.352(a) must be clearly identified by name or title and the name or title must be posted at the mine. Paragraph (a) of proposed § 75.352 sets out the actions to be followed when any malfunction, alert, or alarm signal is received from a CO, smoke, or an equivalent sensor installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), or 75.350(c). These actions are required unless the cause of the alert or alarm signal is known not to be a hazard to the miners. If the cause of the alert or alarm signal is known not to represent a hazard, such as sensor calibration, or cutting and welding, the proposed rule would not require notification of affected workers. However, we would still require a record of these events under proposed § 75.351(o).

The Advisory Committee recommended the automatic activation of signals on the working section when the CO concentration reaches the alert level. However, we believe that automatic activation of signals on the working section at alert levels could potentially inhibit the system's effectiveness if a ''cry wolf'' syndrome develops. Therefore, we have not included this requirement in this proposed rule. This is consistent with recent belt air petition requirements. Under this condition, a miner receiving an alert signal from an AMS that later is determined not to represent a hazard may lose confidence in the system and become desensitized to alarms. Such a situation reduces a miner's confidence in the AMS and may reduce the importance of an alarm to the worker. We believe that the procedures outlined in proposed § 75.352(a)(1) would provide the early warning intended under an alert or malfunction condition. Proposed § 75.352(a)(1) would require that when the alert level is reached or a malfunction occurs, the sensor involved is identified, appropriate personnel are notified, and an examination is immediately begun to find the cause of the alert or malfunction signal.

Proposed paragraph (a)(2) would require that when an alarm level is reached, appropriate personnel need to be notified, including miners in affected working sections, in areas where mechanized mining equipment is being installed or removed, and in other locations specified in the approved program of instruction as set forth in

§ 75.1502. MSHA expects the program of instruction (mine emergency and firefighting plan) will be modified to reflect the actions required § 75.352.

Proposed paragraph (b) would require that when contaminant concentration levels for any CO, smoke, or equivalent sensor installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), or 75.350(c) exceeds the specified alert or alarm level, the following procedures would have to be followed unless the cause of the alert or alarm signal is known not to be a hazard to the miners:

Under proposed paragraph (b)(1), when an alert signal is given, the sensor activated would have to be identified and an examination would have to begin immediately to determine the cause of the alert signal.

Under proposed paragraph (b)(2), when an alarm is given, the sensor that is activated would have to be identified, and the mine emergency evacuation and firefighting procedures initiated as required by the approved program of instruction (§ 75.1502). At a minimum, all personnel in the affected area, unless assigned other duties in the approved program of instruction (§ 75.1502), would have to be promptly evacuated outby the next functioning sensor upwind of the alarming sensor.

In developing this proposed rule, we have attempted to assure that the AMS used represents the state-of-the-art in monitoring. However, no matter how effective the monitoring system is, the safety of those miners affected by the event causing the alert or alarm signal is related to their reaction to the alert or alarm signal. We intend proposed paragraphs (b)(1) through (b)(2) to assure that the mine operator acts to protect the affected miners when an AMS activates an alert or alarm signal.

Paragraph (c) of proposed § 75.352 addresses the action required in case of an alarm from a methane sensor. These would include methane sensors installed in accordance with §§ 75.323(d)(1)(ii) and 75.362(f). The specific actions required by the proposed rule would include identification of the sensor that is causing the alarm and an investigation into the cause of the alarm. This action must also be consistent with the requirements of existing §§ 75.323(c) and § 75.323(d).

Proposed § 75.352(d) addresses the actions required if any fire detection component of the AMS malfunctions or is inoperative. The proposed rule would require the operator to take immediate action to return the system to proper operation. It is our intention that the belt would not operate if all or part of an AMS installed in accordance with §§ 75.350(b) or 75.350(c) becomes inoperative unless the actions specified in paragraph (d) are taken. The proposed standard is consistent with the Advisory Committee recommendation and with recent petitions that permit the use of belt air to ventilate working places.

Paragraph (d)(1) would cover those instances when one sensor becomes inoperative. Under this condition, we would require the operator to station a person trained in the use of hand-held devices to continually monitor for CO or smoke near the inoperative sensor.

This action is consistent with current requirements in granted petitions and gives the mine operator needed information on the atmosphere at the location of the inoperative sensor.

Paragraph (d)(2) specifies the monitoring that would be required if two or more adjacent AMS sensors become inoperative. Under the proposed rule, a sufficient number of trained persons would be required to patrol and continuously monitor the area affected so that the area is traveled each hour in its entirety. As an alternative under (d)(2), the operator could station a trained person near each inoperative sensor to continuously monitor CO or smoke.

These actions are consistent with current requirements in granted petitions and give the mine operator needed information on the atmosphere at the locations of the inoperative sensors.

Proposed paragraph (d)(3) would specify actions required if the complete system becomes inoperative. When determining what is complete system failure, we do not mean that every component of the system does not function. It is intended that this paragraph of the proposed rule would apply when part of the system is inoperative to render the system incapable of performing its intended function. For example, if a break in the data transmission line occurs that does not permit sensors to communicate with the central processing unit (CPU) on the surface or if the CPU itself becomes inoperative although all underground components continue to operate, the entire system should be considered inoperative. When the entire system becomes inoperative, paragraph (d)(3) would require the mine operator to take immediate action to have trained persons patrol and continuously monitor for CO or smoke so that the affected belt entry(ies) is traveled each hour in its entirety. This means, as an example, that the affected area is traveled in its entirety between 1 pm and 2 pm and then traveled again in its entirety between 2 pm and 3 pm, and so on.

When monitoring is conducted during times of system or sensor malfunction, the person doing the monitoring must be qualified to make these tests. As specified in (d)(4), the person would have communication available with the designated surface location or communication available at intervals not to exceed 2,000 feet. This could be a mine phone, telephone, trolley phone, or radio location. Easily accessible communication is necessary to ensure quick notification to the designated surface location when an alert or alarm level is reached.

Paragraph (d)(5) would require the trained persons monitoring under this section to report the concentrations detected at the affected AMS sensor(s) at intervals not to exceed an hour. This action gives the mine operator needed information on the atmosphere at the locations of the affected sensors. It also requires that the person monitoring under this part immediately report levels of contaminants reaching the specified alert and alarm levels unless the cause of the contaminant is known not to represent a hazard. In addition, for mines using a time delay, persons monitoring under this section would be expected to report the concentrations immediately following the expiration of the applicable time delay.

Paragraph (d)(6) would require that instruments used to comply with this paragraph have a level of detectability comparable to those required for AMS sensors by proposed § 75.351(l). Hand-held methane and CO detectors are commercially available. Some AMS sensors do not have commercially available hand-held counterparts, so that an alternate instrument would be needed as proposed in (d)(7). For example, smoke sensors which malfunction will require monitoring with an alternate sensor, perhaps a hand-held CO detector, with alert and alarm levels to be specified and approved in the mine ventilation plan.

Paragraph (e) requires that if the 50-fpm minimum air velocity is not maintained in the belt entry as required in proposed § 75.351(e)(3), immediate action must be taken to return the ventilation system to proper operation. It also requires that while the 50-fpm air velocity is not maintained, trained persons must patrol and continuously monitor for CO or smoke as set forth in § 75.352(d) so that the affected belt entry(ies) is traveled each hour in its entirety. As discussed previously, contaminants must reach the sensors in order to be detected. Less than a 50-fpm

velocity with 1,000-foot sensor spacing is considered a system failure because air currents will not carry sufficient amount of contaminants to the sensors for detection. This is considered a system failure since the system is not able to provide adequate warning.

Section 75.371 Mine ventilation plan, contents.

Section 75.371 sets forth the information that the mine operator must include in the mine ventilation plan. The mine ventilation plan is mine specific and is designed to permit safe and healthful operation of the mine by ensuring that ventilation is sufficient to dilute and render harmless hazardous components of mine air such as carbon monoxide and methane, and provide necessary levels of oxygen to the mine working environment.

We are proposing to add six requirements to the mine ventilation plan. These new paragraphs, §§ 75.371(ii) through (nn), would require certain information to be specified and approved. Under the proposed rule, the existing paragraphs (ii) through (nn) would be redesignated as (oo) through (vv).

Existing § 75.371(hh) requires that the mine ventilation plan specify the ambient level in parts per million of CO, and the method for determining the ambient level. The proposed rule, § 75.351(j), does not change this requirement.

Proposed paragraph (ii), in accordance with proposed § 75.350(b)(3), requires the locations (designated areas) where dust measurements would be made in the belt entry when belt air is used to ventilate working sections and setup or removal areas. As discussed under proposed § 75.350(b)(3), the Advisory Committee determined that multiple designated areas should be established for mines using belt air to ventilate working places.

Proposed paragraph (jj), in accordance with § 75.350(c)(5), requires the location of all point-feed regulators be indicated in the mine ventilation plan to control the number and location of point-feed regulators.

Proposed paragraph (kk), in accordance with § 75.351(e)(5), requires the location of any additional CO or smoke sensor required by the district manager. Proposed §§ 75.351(e)(1) through (e)(4) specify the required locations where sensors monitor CO or smoke along belts. We recognize instances may occur when additional sensors are necessary to provide the desired level of protection. In those cases, proposed § 75.351(e)(5) would require that these locations be specified and approved in the mine ventilation plan. We do not intend that every mine ventilation plan would require additional sensors to be specified. Only in those cases when additional sensors are necessary would the mine ventilation plan contain this information.

Proposed paragraph (ll), in accordance with § 75.351(m), requires the length of time delays or other methods (a sophisticated algorithm similar to that employed by the diesel discriminator, human intervention, controlling or limiting diesel equipment operation) used to reduce the number of non-fire related alert and alarm signals from the AMS. Proposed § 75.351(m) requires that the length of the delays be specified and approved in the mine ventilation plan. Proposed § 75.351(m) also requires that computer techniques or administrative controls used to reduce the number of non-fire alert and alarm signals be approved in the mine ventilation plan. As discussed under proposed § 75.351(m) the use of reasonable time delays and other computer techniques have been successful in reducing the number of non-fire alert and alarm signals. However, because these techniques should be used only when necessary (when nuisance alarms are excessive) and should delay the activation of alert and alarm signals for the shortest time possible, they should be specified and approved in the mine ventilation plan.

Proposed paragraph (mm), in accordance with § 75.351(i)(2), requires that when lower alert and alarm settings for CO sensors are required by the district manager they be specified in the mine ventilation plan.

Proposed paragraph (nn), in accordance with § 75.352(d)(7), requires that non-AMS sensors (the alternate detectors) be approved in the ventilation plan if it can be used to monitor the belt entry in the case of an AMS malfunction. This provision would permit the use of a CO detector to monitor a belt entry equipped with smoke sensors. Such a CO detector would be used if it meets the levels of detectability that would be expected if it were used in place of an AMS with CO sensors.

Section 75.372 Mine ventilation map.

Existing § 75.372 (b)(16) requires that the location of all AMS sensors be shown on the ventilation map. Under the proposed rule this requirement would be modified to require that the type of sensor also be shown on the ventilation map. With the anticipated increased usage of sensors other than CO sensors, it is important that persons who may be called upon to respond to alert and alarm signals have information available that tells them both the type and location of these sensors.

Section 75.380(g) Escapeway; bituminous and lignite mines.

Proposed paragraph (g) of § 75.380 would require that the primary escapeway be separated from belt and trolley haulage entries for its entire length, to and including the first connecting crosscut outby each loading point except when a greater or lesser distance for this separation is specified and approved in the mine ventilation plan and does not pose a hazard to miners. This modification to existing § 75.380(g) allows point-feed regulators to be installed and monitored when additional intake air is required in the belt air course according to proposed § 75.350(c). Exceptions to this proposed provision include where separation of belt and trolley haulage entries from designated escapeways did not exist before November 15, 1992, and as provided in § 75.350(c).

V. Paperwork Reduction Act

This proposed rule contains information collection requirements in various provisions. The PREA is located on our website at *http://www.msha.gov/REGSINFO.HTM.* These proposed paperwork requirements are under OMB Control Numbers 1219–0065, 1219–0067, 1219–0073, and 1219–0088 and have been submitted to the Office of Management and Budget (OMB) for review under 44 U.S.C. 3504(h) of the Paperwork Reduction Act of 1995, as amended. Comments on the proposed paperwork provisions should be sent to both the Office of Information and Regulatory Affairs of OMB and to MSHA. Comments sent to OMB should be sent to the Attention of the Desk Officer for the Mine Safety and Health Administration. Comments sent to MSHA should be sent to the Office of Standards, Regulations, and Variances. Addresses for both offices can be found in the **ADDRESSES** section of this preamble.

MSHA estimates that the proposed rule would create 18,609 burden hours for the first year, 19,170 burden hours for the second year, and 19,999 burden hours for the third year, for a total of 57,776 burden hours for Years 1 through 3 combined. This is associated with an annualized value of 19,520 hours per year and related annualized costs of $973,313 per year.

On a per-mine basis, MSHA estimates the same paperwork burdens for both new and existing mines that use belt air.

However, MSHA estimates that as time goes by a greater proportion of new coal mines using three or more entries will choose to use belt air. This means that the number of mines using belt air will increase over time. This greater number of mines using belt air will increase the total burden hours and paperwork cost over time. Hence, second year hours and costs are greater than first year hours and costs, and third year hours and costs are greater than second year hours and costs.

The paperwork burden is summarized by total annualized burden hours by proposed provision (Table 4) and by total annualized burden costs by proposed provision (Table 5).

Numerous provisions would require action to modify the mine ventilation plan. Proposed paragraph 75.351(j) would require modification of the mine ventilation plan to include ambient CO levels and the means used to determine them. Proposed paragraph 75.351(m) would require that the mine ventilation plan be modified to show the use and length of time-delays of any non-fire related CO sensor signals. Proposed paragraphs 75.371(ll), 75.371(mm), and 75.371(nn) would require modification of the mine ventilation plan to show the length of the time delay or any other method used for reducing the number of non-fire related alert and alarm signals from CO sensors, the lower alert and alarm setting for CO sensors, and the alternate instrument and the alert and alarm levels associated with the instrument, respectively. This proposed rule would also have an impact on existing paperwork requirements in 75.371(hh) on the ambient level in parts per million of CO, and the method for determining the ambient level, in all areas where CO sensors are installed.

Proposed paragraph 75.351(n)(1) would require sensors used to detect CO or smoke be visually examined at least once each shift, when belts are operated as part of a production shift. If hazardous conditions are found during the visual exam, then a log of such conditions must be filed under existing § 75.363(b)—Hazardous conditions; posting, correcting and recording. Proposed paragraphs 75.351(n)(2) and 75.351(n)(3) would require that a log be kept of every seven day alarm test and every 31-day CO, smoke, or methane sensor calibration, respectively.

Proposed paragraph 75.351(o)(1)(i) would require that a record be made if the AMS emits an alert or alarm signal. The record would consist of the date, time, location and type of sensor, and the reason for its activation. Proposed paragraph (o)(1)(ii) would require that, if a malfunction in the system occurs, a record be made of the malfunction and the corrective action to return the system to proper operating condition. We (MSHA) believe that such records would be useful to the miner, the mine operator, and the Agency in determining areas of recurring problems. This would aid in ensuring proper operation of AMS.

Proposed paragraph (o)(1)(iii) would require that the persons doing the weekly test of alert and alarm signals, the monthly calibration, or maintenance of the system make a record of these tests, calibrations, or maintenance. Proposed paragraph § 75.351(o)(3) would require that all records concerning the AMS be kept in a book or electronically in a computer system, that would be secure and not susceptible to alteration. Proposed paragraph 75.351(p) would require the mine operator to keep these records for at least one year at a surface location and to make them available for inspection by authorized representatives of the Secretary and representatives of miners.

Proposed paragraph 75.351(q) would require that AMS operators receive training annually and that a record of this training be kept. The record of training would include the content of training, the person conducting the training, and the date the training was conducted. The record would need to be maintained at the mine site by the mine operator for at least one year.

Proposed paragraphs 75.352(a) and 75.352(b) would require the designated AMS operator or other designated responsible person to take actions promptly when malfunction, alert, or alarm signals are received. These proposed requirements are parallel to those of § 75.351(o).

TABLE 4.—TOTAL BURDEN HOURS OF PROPOSED RULE

[Summary of all burden hours, by mine size and by provision]

Provision	Annualized burden hours [1]				
	Mines with 1–19 employees	Mines with 20–99 employees	Mines with 100–500 employees	Mines with over 500 employees	Total annual burden hours
§ 75.350(b), implied impact on existing §§ 44.9, 44.10, and 44.11	(59.51)	(161.07)	(125.20)	(8.58)	(354.35)
§§ 75.351(j)	16.81	43.55	29.71	1.82	91.88
§ 75.351(j), implied impact on existing § 75.371(hh)	0.53	1.36	0.93	0.06	2.87
§§ 75.351(m)	0.75	8.93	15.63	1.45	26.76
§§ 75.351(n)(1), implied impact on existing § 75.363(b)	1.96	5.16	8.72	1.20	17.03
§§ 75.351(n)(2)	190.73	1,005.54	1,700.55	156.00	3,052.82
§§ 75.351(n)(3)	220.07	2,320.48	7,848.70	900.00	11,289.25
§§ 75.351(o)(1)(i) & (ii)	9.74	163.68	876.52	135.15	1,185.09
§§ 75.351(o)(1)(iii)	32.28	273.30	811.03	90.40	1,207.01
§§ 75.351(q)	135.71	512.44	752.17	63.75	1,464.07
§§ 75.352(a) & (b)	61.62	397.99	975.91	100.75	1,536.27
§§ 75.371(ll)	0.02	0.28	0.49	0.05	0.84
§§ 75.371(mm)	0.05	0.14	0.09	0.01	0.29
§§ 75.371(nn)	0.11	0.27	0.19	0.01	0.57
Total	610.86	4,572.03	12,895.44	1,442.07	19,520.40

[1] Source: Chapter VII of the Preliminary Regulatory Economic Analysis.

TABLE 5.—TOTAL BURDEN COSTS OF PROPOSED RULE

[Summary of all burden costs, by mine size and by provision]

Provision	Annualized burden costs [1]				
	Mines with 1–19 employees	Mines with 20–99 employees	Mines with 100–500 employees	Mines with over 500 employees	Total annual burden hours
§ 75.350(b), implied impact on existing §§ 44.9, 44.10, and 44.11	($3,268)	($8,846)	($6,876)	($471)	($19,461)
§§ 75.351(j)	923	2,391	1,632	100	5,046
§ 75.351(j), implied impact on existing §§ 75.371(hh)	29	75	51	3	158
§§ 75.351(m)	41	490	858	80	1,470
§§ 75.351(n)(1), implied impact on existing § 75.363(b)	55	145	245	34	478
§§ 75.351(n)(2)	10,475	55,224	93,394	8,568	167,661
§§ 75.351(n)(3)	12,086	127,441	431,051	49,428	620,005
§§ 75.351(o)(1)(i) & (ii)	273	4,595	24,604	3,794	33,266
§§ 75.351(o)(1)(iii)	1,773	15,010	44,542	4,965	66,289
§§ 75.351(q)	5,877	19,836	27,260	2,212	55,185
§§ 75.352(a) & (b)	1,730	11,171	27,394	2,828	43,123
§§ 75.371(ll)	1	15	27	2	46
§§ 75.371(mm)	3	7	5	0	16
§§ 75.371(nn)	6	15	10	1	32
Total	30,004	227,570	644,196	71,543	973,313

[1] Source: Chapter VII of the Preliminary Regulatory Economic Analysis.

VI. Executive Order 12866 (Regulatory Planning and Review) and Regulatory Flexibility Act

Executive Order (E.O.) 12866 (58 FR 51735) as amended by E.O. 13258 (Amending Executive Order 12866 on Regulatory Planning and Review (67 FR 9385)) requires that regulatory agencies assess both the costs and benefits of regulations. MSHA has determined that this proposed rule would not have an annual effect of $100 million or more on the economy and that, therefore, it is not an economically ''significant regulatory action'' pursuant to § 3(f) of E.O. 12866. However, we have determined that this proposed rule is significant under § 3(f) of E.O. 12866, which defines a significant regulatory action as one that may ''* * * raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.'' MSHA completed a Preliminary Regulatory Economic Analysis (PREA) in which the economic impact of the rule is estimated. The PREA is available from MSHA and is summarized as follows.

A. Population-at-Risk

MSHA estimates that this rulemaking would initially affect approximately 11,313 miners at 88 underground coal mines which choose to use belt air at the working places during the first year of the proposed rule. MSHA also estimates that this rulemaking would additionally affect approximately 2,358 miners at 30 underground coal mines which choose to point feed the belt air, but do not use belt air at the working places, during the first year of the proposed rule. Accordingly, MSHA estimates that this rulemaking would affect a total of approximately 13,671 miners at 118 underground coal mines during the first year of the proposed rule.

B. Benefits

MSHA has qualitatively determined that the proposed rule, to permit use of belt air at the working places, yields net health and safety benefits relative to the existing rule, which does not permit use of belt air at the working places. The proposed rule does not create any health or safety hazards relative to current petition practice, which also permits use of belt air at the working places.

The main requirement of the proposed rule is that the mine operator who chooses to use belt air must install an atmospheric monitoring system (AMS) in the belt entry for fire detection. The AMS composed of CO or smoke sensors provides early warning fire detection that is superior to that provided by point-type heat sensors. This added level of protection is beneficial to both workers and the mine owner.

The AMS is beneficial to the mine operator because early warning of a mine fire provides maximal opportunity for extinquishing the fire. An uncontrolled mine fire can damage or destroy a coal mine and can delay or prevent future mining of coal in the affected mine. The AMS is beneficial to workers, because the early warning of fire from an AMS permits more time for miners to escape. Early warning from the AMS also gives the firefighting crew more time to fight or extinguish a fire before it creates a serious mine fire accident or disaster.

The proposed rule utilizes the common interests of both workers and mine owners to avoid mine fires, and particularly to avoid fires that may result in a serious mine fire accident. By reducing regulatory hurdles to the use of belt air at the working places, the proposed rule would provide additional encouragement for mine operators to install an AMS. The installation of AMS in additional mines would reduce the risk of mine fire accidents that may injure or kill miners or severely damage mine property.

In addition, MSHA's experience with belt air petitions indicates that, with proper precautions, allowing belt air to ventilate working places can achieve net health and safety benefits. Belt air usage can result in an increase in the quantity of air in the belt entry and other common entries (belt air course). This provides increased protection to miners against hazards created by elevated levels of methane, other harmful gases, and respirable dust.

Prevention of mine fires can also benefit local communities. In the event a mine fire is uncontrolled, persons living in the area of the mine may need to be evacuated for several days due to the smoke and toxic fumes escaping to the surface from a mine fire. In addition, there can be long-term adverse economic impacts on a community

when a mine fire shuts down a coal mine.

C. Compliance Costs

The proposed rule revises various sections of part 75, which regulates underground coal mines. These revised sections include § 75.301 Definitions, § 75.350 Air courses and belt haulage entries (title revised to Belt air course ventilation), § 75.351 Atmospheric monitoring systems, § 75.352 Return air courses (title revised to Actions in response to AMS alert and alarm signals or malfunctions), § 75.371 Mine ventilation plan, § 75.372 Mine ventilation map, and § 75.380(g) Escapeway; bituminous and lignite mines.

The main substantive changes of the proposed rule are for three-or-more-entry mines that voluntarily choose to use belt air as intake air to ventilate the working places of the coal mine. Three-or-more-entry mines that choose to ventilate the working places with belt air are required to use an atmospheric monitoring system (AMS) to assure worker safety. A secondary substantive change applies to three-or-more entry mines that voluntarily choose to point feed the belt air course.

There are no substantive changes in the proposed rule that apply to any mine that chooses not to use belt air at the working places, and that chooses not to point feed the belt air. Two-entry mines are also not impacted by the proposed rule.

Because all changes impact only mines that voluntarily undertake certain actions, there are only net cost savings from the proposed rule. This is because MSHA presumes that no mine operator would install and use an AMS in order to use belt air unless the mine operator anticipated cost savings as a result.

The primary cost savings from the proposed rule accrue to underground coal mines that choose to use belt air at the working places. Total cost savings from this source are estimated at approximately $650,000 per year. These cost savings for the belt-air mines also include cost savings from point feeding.

Secondary cost savings of the proposed rule accrue to mines that choose to point feed the belt air, but choose not to use belt air at the working sections. For these mines, the cost savings from point feeding are estimated at $31 thousand per year. In total, the cost savings from the proposed rule are approximately $680,000 per year.

D. Economic Impact

The proposed rule will enhance safety in belt air mines while utilizing the common incentive of both workers and mine owners to avoid mine fires, and particularly to avoid fires that may result in a serious mine fire accident.

MSHA believes that the estimated cost savings of this proposed rule are conservative because contested petition costs were not included in the preliminary economic analysis. If a petition is contested, the costs to the petitioner could increase by as much as $100,000.

The proposed rule provides additional encouragement for mine operators to install an AMS by reducing regulatory hurdles to the use of belt air at the working places. The installation of AMSs in additional mines will reduce the risk of mine fire accidents that may injure or kill miners or severely damage mine property. Mine operators are inherently interested in avoiding these catastrophic incidents that could result in the lost of the mine. This proposed rule would mandate the proper installation and maintenance of AMSs that would serve to further protect mine property from these catastrophic incidents.

MSHA has concluded that the proposed rule will have only a small (but favorable) effect on coal output, price, and profitability.

E. Feasibility

MSHA has concluded that the requirements of the proposed rule are both technologically and economically feasible.

This proposed rule is not a technology-forcing standard and does not involve activities on the frontiers of scientific knowledge. The technology to monitor the mine atmosphere and to alert miners of hazards involve available, off-the-shelf technologies that are currently being used in many mines. Also, standard procedures used to safeguard the safety of miners are approved by the Agency through the mine's fire fighting and evacuation plan. Other provisions of the proposed rule will reduce petition requirements.

The proposed rule is clearly economically feasible insofar as it will reduce costs for the mining industry while increasing the use of AMSs to monitor the mine atmosphere. The primary cost savings of $654,000 per year from the proposed rule come from the ability of underground coal mines to use belt air. Approximately 70 percent of these cost savings are generated from reduced shaft-sinking costs for new mines. The other 30 percent of cost savings come from energy cost savings from reductions in ventilation fan power (25%) and elimination of the petition for modification process (legal and administrative costs—5%). The secondary cost savings of $31,000 per year from the proposed rule come from mines that choose not to use belt air to ventilate working sections but that do take advantage of the point-feeding provision that applies to all three-or-more entry mines. In total, the cost savings from the proposed rule are $685,728 per year.

The proposed rule would provide for a safe mining environment and would facilitate the use of technologically advanced fire-detection systems. In addition, there would no longer be a time delay for approval due to the petition process. Mine operators could use belt air to ventilate working sections as soon as they are in compliance with the rule.

F. Regulatory Flexibility Act and Small Business Regulatory Enforcement Fairness Act (SBREFA)

The Regulatory Flexibility Act (RFA), as amended by SBREFA, requires regulatory agencies to consider a rule's impact on small entities. For the purposes of the RFA and this preliminary determination, MSHA has analyzed the impact of the proposed rule and has determined that this proposed rule will not have a significant economic impact on a substantial number of small entities that are affected by this rulemaking.

MSHA will mail a copy of the proposed rule, including the preamble and regulatory flexibility certification statement, to all underground coal mine operators and miners' representatives. The proposed rule will also be placed on MSHA's Internet Homepage at *http://www.msha.gov,* under Statutory and Regulatory Information.

In accordance with RFA and its amendments at 5 U.S.C. 605(b), MSHA has determined that this proposed rule will not have a significant adverse economic impact on a substantial number of small entities. No small governmental jurisdictions or nonprofit organizations will be affected.

The RFA, as amended, at 5 U.S.C. § 605(b) also requires MSHA to include in the proposed rule a factual basis for this preliminary determination. This information must be published in the **Federal Register**.

Factual Basis for Certification

The Agency compared the gross costs of the rule for small mines in each sector to the revenue for that sector for both size categories analyzed (MSHA and Small Business Administration ''small entity'' definitions). Given that the gross compliance costs for small mines is substantially less than 1 percent of revenue and that net costs are

negative, MSHA concludes that there is no significant cost impact of the rule on small entities. For both definitions of a small mine, the net cost of the proposed rule is negative. Since the proposed rule results in net cost savings, there would not be any burden placed on small mine operators. Accordingly, MSHA preliminarily certifies that there is no significant impact on a substantial number of small coal mining entities that are affected by this rule.

VII. Other Regulatory Analyses

A. Unfunded Mandates Reform Act of 1995 and Executive Order 12875 (Enhancing the Intergovernmental Partnership)

For purposes of the Unfunded Mandates Reform Act of 1995, as well as E.O. 12875 (58 FR 58093), this proposed rule does not include any Federal mandate that may result in increased expenditures by State, local, and tribal governments, or increased expenditures by the private sector of more than $100 million. MSHA is not aware of any State, local, or tribal government that either owns or operates underground coal mines.

B. Executive Order 13132 (Federalism)

MSHA has reviewed this proposed rule in accordance with Executive Order 13132 (64 FR 43255) regarding federalism, and has determined that it does not have ''federalism implications.'' The proposed rule would not ''have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.'' There are no underground coal mines owned or operated by any State governments.

C. Executive Order 13045 (Health and Safety Effect on Children)

In accordance with Executive Order 13045, 62 FR 19885, MSHA has evaluated the environmental health and safety effect of the proposed rule on children. The Agency has determined that the proposed rule will have no effect on children.

D. Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments)

In accordance with Executive Order 13175 (63 FR 27655), MSHA certifies that the proposed rule does not impose substantial direct compliance costs on Indian tribal governments. MSHA is not aware of any Indian tribal governments which either own or operate underground coal mines.

E. Executive Order 12630 (Governmental Actions and Interference With Constitutionally Protected Property Rights)

This proposed rule is not subject to Executive Order 12630, 53 FR 8859, because it does not involve implementation of a policy with takings implications.

F. Executive Order 12988 (Civil Justice Reform)

The Agency has reviewed Executive Order 12988 (61 FR 4729) and determined that this proposed rule would not unduly burden the Federal court system. The proposed rule has been written so as to provide a clear legal standard for affected conduct, and has been reviewed carefully to eliminate drafting errors and ambiguities.

G. Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use)

In accordance with Executive Order 13211, 66 FR 28355, MSHA has reviewed this proposed rule for its energy impacts. MSHA has determined that this proposed rule would not have any adverse effects on energy supply, distribution, or use.

H. Executive Order 13272 (Proper Consideration of Small Entities in Agency Rulemaking)

In accordance with Executive Order 13272, MSHA has thoroughly reviewed the proposed rule to assess and take appropriate account of its potential impact on small businesses, small governmental jurisdictions, and small organizations. As discussed in Chapter V of the PREA, MSHA has determined that the proposed rule would not have a significant economic impact on a substantial number of small entities.

VIII. Petitions for Modification

On the effective date of the final rule, all existing petitions for modification for belt air used to ventilate working places under § 75.350 in mines with sections developed using three or more entries will be superseded. Mine operators will thereafter be required to comply with the provisions of the final rule. However, all existing two-entry petition requirements will remain in effect and will not be superseded by this rule. Future two-entry mines will need to continue to file petitions to use belt air, since proposed § 75.350(a) prohibits placing the conveyor belt in the return.

List of Subjects in 30 CFR Part 75

Communications equipment, Emergency medical services, Explosives, Fire prevention, Mandatory safety standards, Mine safety and health, Reporting and recordkeeping requirements, Underground coal mines, Ventilation.

Dated: January 13, 2003.

Dave D. Lauriski,

Assistant Secretary of Labor for Mine Safety and Health.

It is proposed to amend, for the reasons set out in the preamble, chapter I of title 30 of the Code of Federal Regulations as follows:

PART 75—MANDATORY SAFETY STANDARDS—UNDERGROUND COAL MINES

1. The authority citation for part 75 continues to read as follows:

Authority: 30 U.S.C. 811.

2. Amend § 75.301 by adding the following definitions:

§ 75.301 Definitions.

* * * * *

AMS operator. The person(s) designated by the mine operator located on the surface of the mine who monitors the malfunction, alert, or alarm signals of the AMS and notifies appropriate personnel to these signals.

* * * * *

Appropriate Personnel. The person or persons designated by the operator to perform specific tasks in response to AMS signals.

* * * * *

Atmospheric Monitoring System (AMS).

(1) A network consisting of hardware and software meeting the requirements of §§ 75.351 and 75.1103–2 and capable of:

(i) Measuring atmospheric parameters;

(ii) Transmitting the measurements to a designated surface location;

(iii) Providing alert and alarm signals;

(iv) Processing and cataloging atmospheric data; and,

(v) Providing reports.

(2) Early-warning fire detection systems using newer technology that provide equal or greater protection, as determined by the Secretary, will be considered an atmospheric monitoring system for the purposes of this subpart.

* * * * *

Belt air course. The entry in which a belt is located and any adjacent entry(ies) not separated from the belt entry by permanent ventilation controls, including any entries in series with the belt entry, terminating at a return regulator, a section loading point, or the surface.

* * * * *

Carbon monoxide ambient level. The average concentration of carbon monoxide detected in an air course containing carbon monoxide sensors. This average is representative of the composition of the mine atmosphere during a non-fire condition.

* * * * *

Point feeding. The process of providing additional intake air to the belt air course from another intake air course through a regulator.

* * * * *

3. Revise § 75.350 to read as follows:

§ 75.350 Belt air course ventilation.

(a) The belt air course must not be used as a return air course; and except as provided in paragraph (b) of this section, the belt air course must not be used to provide air to working sections or to areas where mechanized mining equipment is being installed or removed. The belt air course must be separated with permanent ventilation controls from return air courses and from other intake air courses except as provided in paragraph (c) of this section.

(b) Air from a belt air course may be used to ventilate a working section or an area where mechanized mining equipment is being installed or removed, provided the following requirements are met:

(1) The belt entry must be equipped with an AMS installed, operated, examined, and maintained as specified in § 75.351.

(2) All miners, including newly hired miners must be trained annually in the basic operating principles of the AMS, including the actions required in the event of activation of a system alarm. This training may be conducted as part of a miner's 30 CFR part 48 new miner training (§ 48.5), experienced miner training (§ 48.6), or annual refresher training (§ 48.8).

(3) The average concentration of respirable dust in the belt air course (the intake air course) must be maintained at or below 1.0 mg/m^3. A permanent designated area (DA) for dust measurements must be established at a point no greater than 50 feet upwind from the section loading point in the belt entry when the belt air flows over the loading point or no greater than 50 feet upwind from the point where belt air is mixed with air from another intake air course near the loading point. The DA must be specified and approved in the ventilation plan.

(4) The primary escapeway must be monitored for carbon monoxide or smoke as specified in § 75.351(f).

(5) The section must be developed with three or more entries.

(c) Notwithstanding the provisions of § 75.380(g), additional intake air may be added to the belt air course through a point-feed regulator. The location and use of point feeds must be approved in the mine ventilation plan. If the air through the point feed enters a belt air course which is used to ventilate a working section or an area where mechanized mining equipment is being installed or removed, the following conditions must be met:

(1) The air current that will pass through the point-feed regulator must be monitored for carbon monoxide or smoke at a point within 50 feet upwind of the point-feed regulator;

(2) The air in the belt air course must be monitored for carbon monoxide or smoke upwind of the point-feed regulator. This sensor must be in the belt air course within 50 feet of the mixing point where air flowing through the point-feed regulator mixes with the belt air;

(3) The point-feed regulator must be provided with a means to close the regulator from either air course without requiring a person to enter the air stream passing through the point-feed regulator;

(4) A minimum air velocity of 300 feet per minute must be maintained through the point-feed regulator.

(5) The location of a point-feed regulator(s) must be approved in the mine ventilation plan and the location(s) shown on the mine ventilation map; and

(6) An AMS must be installed, operated, examined, and maintained as specified in § 75.351.

4. Revise § 75.351, to read as follows:

§ 75.351 Atmospheric monitoring systems.

(a) *AMS operation.* Whenever personnel are underground and an AMS is being used to fulfill the requirements of §§ 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 AMS must be operating and a designated AMS operator must be on duty at a location on the surface of the mine where signals from the AMS can be seen and heard and the operator can promptly respond to these signals. However, for extended idle periods exceeding 24 hours, when the belt is not operating, the requirements of §§ 75.350(b) and 75.350(c) will not apply after the initial 24 hour idle period. All provisions of this section will become applicable one hour prior to belt start-up following this idle period.

(b) *Designated surface location and AMS operator.* When an AMS is used to comply 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 following requirements apply:

(1) The mine operator must designate a surface location at the mine or at another location approved by the district manager where signals from the AMS will be received and two-way voice communication is maintained with each working section, areas where mechanized equipment is being installed or removed, and other areas designated in the approved program of instruction (§ 75.1502).

(2) The mine operator must designate an AMS operator to monitor the AMS signals and be at a location on the mine surface where the AMS operator can promptly respond to all signals from the AMS.

(3) A map or schematic must be provided at the designated surface location and updated daily that shows the locations and type of AMS sensor at each location and the intended air flow direction at these locations.

(4) The names of the designated AMS operators, appropriate personnel, and responsible persons referred to in § 75.352, and the method to contact these persons must be provided at the designated surface location.

(c) *Minimum operating requirements.* AMSs used to comply 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) must:

(1) Automatically provide a signal that can be seen or heard by the AMS operator at the designated surface location for any interruption of circuit continuity and any electrical malfunction of the system.

(2) Automatically provide an alert signal that can be seen or heard by the AMS operator at the designated surface location and is distinguishable from alarm signals, when the carbon monoxide concentration or methane concentration at any sensor reaches the alert level as specified in paragraph (i) of this section.

(3) Automatically provide signals that can be seen and heard by the AMS operator at the designated surface location when the carbon monoxide, smoke, or methane concentration at any sensor reaches the alarm level as specified in paragraph (i) of this section.

(4) Automatically provide visual and audible alarm signals at all affected working sections and at all affected areas where mechanized equipment is being installed or removed when the carbon monoxide, smoke, or methane concentration at any sensor reaches the alarm level as specified in paragraph (i) of this section. The signals must be capable of being seen and heard by miners working at these locations.

Methane alarm signals must be distinguishable from other signals.

(5) Automatically provide an alarm signal that can be seen and heard by miners in other locations as specified in the approved program of instruction (§ 75.1502) when the carbon monoxide, smoke, or methane concentration at any sensor reaches the alarm level as specified in paragraph (i) of this section.

(6) Identify at the designated surface location the operational status of all sensors.

(d) *Location and installation of AMS sensors.* (1) All AMS sensors, as specified in paragraphs (e) through (h) of this section, must be located such that measurements are representative of the atmosphere.

(2) Carbon monoxide or smoke sensors must be installed near the center of the entry, as near the roof as feasible in a location that would not expose personnel working on the system to unsafe conditions. Sensors must not be located in abnormally high areas or in other locations where air flow patterns do not permit products of combustion to be carried to the sensors.

(3) Methane sensors must be installed near the center of the entry, at least 12 inches from the roof, ribs, and floor, in a location that would not expose personnel working on the system to unsafe conditions.

(e) *Location of sensors—belt air course.* In addition to the requirements of paragraph (d) of this section, any AMS used to monitor belt air courses under § 75.350(b) must have sensors to monitor for carbon monoxide or smoke located:

(1) At or near the working section belt tailpiece in the air stream ventilating the belt entry. In longwall mining systems the sensor must be located upwind in the belt entry at a distance no greater than 150 feet from the mixing point where intake air is mixed with the belt air at or near the tailpiece;

(2) Upwind, a distance no greater than 50 feet from the point where the belt air course is combined with another air course or splits into multiple air courses;

(3) At intervals not to exceed 1,000 feet along each belt entry in areas where air velocities are maintained at 50 feet per minute or higher. In areas along each belt entry where air velocities are less than 50 feet per minute, the sensor spacing must not exceed 350 feet;

(4) Not more than 100 feet downwind of each belt drive unit, each tailpiece transfer point, and each belt take-up. If the belt drive, tailpiece, and/or take-up are installed together in the same air course they may be monitored with one sensor located not more than 100 feet downwind of the last component; and

(5) At other locations in any entry that is part of the belt air course as required and specified in the ventilation plan.

(f) *Locations of sensors—the primary escapeway.* If used to monitor the primary escapeway under § 75.350(b)(4), carbon monoxide or smoke sensors must be located in the primary escapeway within 500 feet of the working section and within 500 feet inby the beginning of the panel. The point-feed sensor required by § 75.350(c)(1) may be used as the sensor at the beginning of the panel if it is located within 500 feet inby the beginning of the panel.

(g) *Location of sensors—return air splits.* (1) If used to monitor return air splits under § 75.362(f), a methane sensor must be installed in the return split of air between the last working place, or longwall or shortwall face, ventilated by that split of air and the junction of the return air split with another air split, seal, or worked out area.

(2) If used to monitor a return air split under § 75.323(d)(1)(ii), the methane sensors must be installed at the following locations:

(i) In the return air course opposite the section loading point, or, if exhausting auxiliary fan(s) are used, in the return air course no closer than 300 feet downwind from the fan exhaust and at a point opposite or immediately outby the section loading point; and

(ii) Immediately upwind from the location where the return air split meets another split of air or immediately upwind of the location where a split of air is used to ventilate seals or worked-out areas.

(h) *Location of sensors—electrical installations.* When monitoring the intake air ventilating underground transformer stations, battery charging stations, substations, rectifiers, or water pumps under § 75.340(a)(1)(ii) or § 75.340(a)(2)(ii), at least one sensor must be installed to monitor the mine atmosphere for carbon monoxide or smoke, located downwind and not greater than 50 feet from the electrical installation being monitored.

(i) *Establishing alert and alarm levels.* An AMS installed in accordance with the following sections must initiate alert and alarm signals at the specified levels, as indicated:

(1) For § 75.323(d)(1)(ii) alarm at no more than 1.5% methane.

(2) For §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), and 75.350(c), alert at 5 ppm carbon monoxide above the ambient level and alarm at 10 ppm carbon monoxide above the ambient level when carbon monoxide sensors are used; and alarm at a smoke optical density of 0.022 per meter when smoke sensors are used. Reduced alert and alarm settings approved by the district manager may be required for carbon monoxide sensors identified in the mine ventilation plan, § 75.371(mm).

(3) For § 75.362(f), alert at no more than 1.0% methane and alarm at no more than 1.5% methane.

(j) *Establishing carbon monoxide ambient levels.* Carbon monoxide ambient levels and the means to determine these levels must be approved in the mine ventilation plan (§ 75.371(hh)) for monitors installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), and 75.350(c).

(k) *Installation and maintenance.* An AMS installed 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) must be installed and maintained by personnel trained in the installation and maintenance of the system. The system must be maintained in proper operating condition.

(l) *Sensors.* Sensors used to monitor for carbon monoxide, methane, and smoke must be either of a type listed and installed in accordance with the recommendations of a nationally recognized testing laboratory approved by the Secretary; or these sensors must be of a type, and installed in a manner, approved by the Secretary.

(m) *Time delays.* When a demonstrated need exists, time delays may be incorporated into the AMS. These time delays must only be used to account for non-fire related carbon monoxide sensor signals. The use and length of any time delays, or other techniques or methods which eliminate or reduce the need for time delays, must be specified and approved in the mine ventilation plan. These time delays are limited to no more than three minutes.

(n) *Examination, testing, and calibration.* (1) At least once each shift when belts are operated as part of a production shift, sensors used to detect carbon monoxide or smoke in accordance with § 75.350(b) and alarms installed in accordance with § 75.350(b) must be visually examined.

(2) At least once every seven days, alarms for AMS installed in accordance with §§ 75.350(b) and 75.350(c) must be functionally tested for proper operation.

(3) At intervals not to exceed 31 days—

(i) Each carbon monoxide sensor installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), or 75.350(c) must be calibrated in accordance with the manufacturer's calibration specifications. Calibration must be done

with a known concentration of carbon monoxide in air sufficient to activate the alarm;

(ii) Each smoke sensor installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), or 75.350(c) must be functionally tested in accordance with the manufacturer's calibration specifications;

(iii) Each methane sensor installed in accordance with §§ 75.323(d)(1)(ii) or 75.362(f) must be calibrated in accordance with the manufacturer's calibration specifications. Calibration must be done with a known concentration of methane in air sufficient to activate an alarm.

(4) Gases used for the testing and calibration of AMS sensors must be traceable to the National Institute of Standards and Technology reference standard for the specific gas. When these reference standards are not available for a specific gas, calibration gases must be traceable to an analytical standard which is prepared using a method traceable to the National Institute of Standards and Technology. Calibration gases must be within ±2.0 percent of the indicated gas concentration.

(o) *Recordkeeping.* (1) When an AMS is used to comply 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), responsible persons designated by the operator must make the following records by the end of the shift in which the following event(s) occur:

(i) If an alert or alarm signal occurs, a record of the date, time, location and type of sensor, and the cause for the activation.

(ii) If an AMS malfunctions, a record of the date, the extent and cause of the malfunction, and the corrective action taken to return the system to proper operation.

(iii) A record of the seven-day test of alert and alarm signals, calibrations, and maintenance performed on the system must be made by the person(s) performing the test, calibration, or maintenance.

(2) The person entering the record must include their name, title, date, and signature in the record.

(3) The records required by this section must be kept in a secure book that is not susceptible to alteration, or must be kept electronically in a computer system that is secure and not susceptible to alteration. These records must be maintained separately from other records and identifiable by a title, such as the ''AMS log.''

(p) *Retention period.* Records must be retained for at least one year at a surface location at the mine and made available for inspection by miners and authorized representatives of the Secretary.

(q) *Training.* All AMS operators must be trained annually in the proper operation of the AMS. A record of the content of training, the person conducting the training, and the date the training was conducted, must be maintained at the mine for at least one year by the mine operator.

(r) *Communications.* When an AMS is used to comply with § 75.350(b), a two-way voice communication system, as required by paragraph (b)(1) of this section, must be installed in a different entry that is separate from the AMS.

5. Revise § 75.352 to read as follows:

§ 75.352 Actions in response to AMS malfunction, alert, or alarm signals.

(a) The designated AMS operator or other designated responsible person must promptly initiate the following actions:

(1) When a malfunction or alert signal is given, notify appropriate personnel, immediately begin an examination to determine the cause, and take required action to address it, and

(2) When an alarm is given, notify appropriate personnel, including miners in affected working sections, in areas where mechanized mining equipment is being installed or removed, and in other locations specified in the approved program of instruction as set forth in § 75.1502.

(b) If contaminant concentration levels for any carbon monoxide, smoke, or equivalent sensor installed in accordance with §§ 75.340(a)(1)(ii), 75.340(a)(2)(ii), 75.350(b), or 75.350(c) exceed the specified alert or alarm level, the following procedures must be followed unless the cause of the alert or alarm signal is known not to be a hazard to the miners:

(1) When an alert signal is given, the sensor activated must be identified and an examination must begin immediately to determine the cause of the alert signal.

(2) When an alarm is given, the sensor that is activated must be identified, and the fire fighting and evacuation procedures initiated as required by the approved program of instruction (§ 75.1502). At a minimum, all personnel in the affected area, unless assigned other duties in the approved program of instruction (§ 75.1502), must be promptly evacuated outby the next functioning sensor upwind of the alarming sensor.

(c) If an alert or alarm signal from a methane sensor in a return air split is activated, the sensor producing the alert or alarm signal must be identified, an examination must be made to determine the cause of the activation, and the actions required under § 75.323 must be taken.

(d) If any fire detection components of the AMS malfunction or are inoperative, immediate action must be taken to return the system to proper operation. During the time that AMS component repairs are being made, operation of the belt may continue if the following conditions are met:

(1) If one AMS sensor becomes inoperative, a trained person must continuously monitor for carbon monoxide or smoke at the inoperative sensor.

(2) If two or more adjacent AMS sensors become inoperative, a trained person(s) must patrol and continuously monitor for carbon monoxide or smoke in the affected area so that the affected area will be traveled each hour, or a trained person must be stationed to monitor at each inoperative sensor.

(3) If the complete system becomes inoperative, trained persons must patrol and continuously monitor for carbon monoxide or smoke so that the affected belt entries are traveled each hour in their entirety.

(4) The trained person(s) monitoring under this section must, as a minimum, have two-way voice communication capabilities with the AMS operator at intervals not to exceed 2,000 feet.

(5) The trained persons monitoring under this section must report the concentrations detected at the affected AMS sensor(s) at intervals not to exceed one hour. In addition, the trained person must report as soon as possible to the AMS operator any concentration of the contaminant that reaches either the alert or alarm level specified in § 75.351(i), or the alternate alert and alarm level specified in paragraph (d)(7) of this section, unless the source of the contaminant is known not to represent a hazard.

(6) Instruments used to monitor under this section must have a level of detectability equal to that required of the sensors in § 75.351(l).

(7) For those AMSs using sensors other than carbon monoxide sensors, an alternate detector and the alert and alarm levels associated with that detector must be specified and approved in the ventilation plan.

(e) If the 50-foot per minute minimum air velocity is not maintained when required in § 75.351(e)(3), immediate action must be taken to return the ventilation system to proper operation. Trained persons must patrol and continuously monitor for carbon monoxide or smoke as set forth in paragraphs (d)(1) through (7) of this

section, so that all portions of the affected belt entry(ies) are examined once each hour.

6. Redesignate § 75.371 (ii) through (pp) as paragraphs (oo) through (vv), respectively, and add new paragraphs (ii) through (nn) to read as follows:

§ 75.371 Mine ventilation plan; contents.

* * * * *

(ii) The locations (designated areas) where dust measurements would be made in the belt entry when belt air is used to ventilate working sections or areas where mechanized mining equipment is being installed or removed, § 75.350(b)(3).

(jj) The locations of point-feed regulators, § 75.350(c)(5).

(kk) The location of any additional carbon monoxide or smoke sensor installed in the belt air course, § 75.351(e)(5).

(ll) The length of the time delay or any other method used for reducing the number of non-fire related alert and alarm signals from carbon monoxide sensors, § 75.351(m).

(mm) The lower alert and alarm settings for carbon monoxide sensors, § 75.351(i)(2).

(nn) The alternate detector and the alert and alarm levels associated with the detector, § 75.352(d)(7).

* * * * *

7. Amend § 75.372 by revising paragraph (b)(16) to read as follows:

§ 75.372 Mine ventilation map.

* * * * *

(b) * * *

(16) The locations and type of all AMS sensors required by this part.

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8. Amend § 75.380, by revising paragraph (g) to read as follows:

§ 75.380 Escapeway; bituminous and lignite mines.

* * * * *

(g) Except where separation of belt and trolley haulage entries from designated escapeways did not exist before November 15, 1992, and except as provided in § 75.350(c), the primary escapeway must be separated from belt and trolley haulage entries for its entire length, to and including the first connecting crosscut outby each loading point except when a greater or lesser distance for this separation is specified and approved in the ventilation plan and does not pose a hazard to miners.

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