as to minimize the possibility of damage from roof falls and the moving belt and its load. Sensors must be installed near the center in the upper third of the entry, in a manner that does 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.

(c) Infrared, ultraviolet, and other sensors whose effectiveness is impaired by contamination shall be protected from dust, dirt, and moisture.

(d) The voltage of automatic fire sensor and warning device systems shall not exceed 120 volts.

(e) Except when power must be cut off in the mine under the provisions of § 75.313, automatic fire sensor and warning device systems shall be capable of giving warning of fire for a minimum of 4 hours after the source of power to the belt is removed unless the belt haulageway is examined for hot rollers and fire as provided in paragraph (e) (1) or (2) of this section.

(1) When an unplanned removal of power from the belt occurs an examination for hot rollers and fire in the operating belts of a conveyor system shall be completed within 2 hours after the belt has stopped.

(2) When a preplanned removal of power from the belt occurs an examination for hot rollers and fire on the operating belts of a conveyor system may commence not more than 30 minutes before the belts are stopped and shall be completed within 2 hours after the examination is commenced, or the examination shall be commenced when the belts are stopped and completed within 2 hours after the belts are stopped.

[37 FR 16545, Aug. 16, 1972, as amended at 57 FR 20928, May 15, 1992; 73 FR 80614, Dec. 31, 2008]

§ 75.1103–5 Automatic fire warning devices; actions and response.

(a) When the carbon monoxide level reaches 10 parts per million above the established ambient level at any sensor location, automatic fire sensor and warning device systems shall provide an effective warning signal at the following locations:

(1) At working sections and other work locations where miners may be endangered from a fire in the belt entry.

(2) At a manned surface location where personnel have an assigned post of duty. The manned surface location must have:

(i) A telephone or equivalent communication with all miners who may be endangered and

(ii) A map or schematic that shows the locations of sensors, and the intended air flow direction at these locations. This map or schematic must be updated within 24 hours of any change in this information.

(3) The automatic fire sensor and warning device system shall be monitored for a period of 4 hours after the belt is stopped, unless an examination for hot rollers and fire is made as prescribed in § 75.1103–4(e).

(b) The fire sensor and warning device system shall include a means for rapid evaluation of electrical short and open circuits, ground faults, pneumatic leaks, or other defect detrimental to its proper operational condition.

(c) Automatic fire sensor and warning devices shall include a manual reset feature.

(d) When a malfunction or warning signal is received at the manned surface location, the sensors that are activated must be identified and appropriate personnel immediately notified.

(e) Upon notification of a malfunction or warning signal, appropriate personnel must immediately initiate an investigation to determine the cause of the malfunction or warning signal and take the required actions set forth in paragraph (f) of this section.

(f) If any sensor indicates a warning, the following actions must be taken unless the mine operator determines that the signal does not present a hazard to miners:

(1) Appropriate personnel must notify miners in affected working sections, in affected areas where mechanized mining equipment is being installed or removed, and at other locations specified in the approved mine emergency evacuation and firefighting program of instruction; and

(2) All miners in the affected areas, unless assigned emergency response duties, must be immediately withdrawn to a safe location identified in the mine emergency evacuation and firefighting program of instruction.

(g) If the warning signal will be activated during calibration of sensors, personnel manning the surface location must be notified prior to and upon completion of calibration. Affected working sections, areas where mechanized mining equipment is being installed or removed, or other areas designated in the approved emergency evacuation and firefighting program of instruction must be notified at the beginning and completion of calibration.

(h) If any fire detection component becomes inoperative, immediate action must be taken to repair the component. While repairs are being made, operation of the belt may continue if the following requirements are met:

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

(2) If two or more adjacent sensors become inoperative, trained persons must patrol and continuously monitor the affected areas for carbon monoxide so that they will be traveled each hour in their entirety. Alternatively, a trained person must be stationed at each inoperative sensor to monitor for carbon monoxide;

(3) If the complete fire detection system becomes inoperative, trained persons must patrol and continuously monitor the affected areas for carbon monoxide so that they will be traveled each hour in their entirety;

(4) Trained persons who conduct monitoring under this section must have two-way voice communication capability, at intervals not to exceed 2,000 feet, and must report carbon monoxide concentrations to the surface at intervals not to exceed one hour;

(5) Trained persons who conduct monitoring under this section must immediately report to the surface any concentration of carbon monoxide that reaches 10 parts per million above the established ambient level, unless the mine operator knows that the source of the carbon monoxide does not present a hazard to miners; and

(6) Handheld detectors used to monitor the belt entry under this section must have a detection level equivalent to that of the system's carbon monoxide sensors.

[37 FR 16545, Aug. 16, 1972, as amended at 73 FR 80615, Dec. 31, 2008]

§ 75.1103–6 Automatic fire sensors; actuation of fire suppression systems.

Point-type heat sensors or automatic fire sensor and warning device systems may be used to actuate deluge-type water systems, foam generator systems, multipurpose dry-powder systems, or other equivalent automatic fire suppression systems.

[73 FR 80615, Dec. 31, 2008]

§ 75.1103–7 Electrical components; permissibility requirements.

The electrical components of each automatic fire sensor and warning device system shall:

(a) Remain functional when the power circuits are deenergized as required by § 75.706; and

(b) Be provided with protection against ignition of methane or coal dust when the electrical power is deenergized as required by § 75.313, but these components shall be permissible or intrinsically safe if installed in a return airway.

[37 FR 16546, Aug. 16, 1972, as amended at 57 FR 20929, May 15, 1992]

§ 75.1103–8 Automatic fire sensor and warning device systems; examination and test requirements.

(a) Automatic fire sensor and warning device systems shall be examined at least once each shift when belts are operated as part of a production shift. A functional test of the warning signals shall be made at least once every seven days. Examination and maintenance of such systems shall be by a qualified person.

(b) A record of the functional test conducted in accordance with paragraph (a) of this section shall be maintained by the operator and kept for a period of one year.

(c) Sensors shall be calibrated in accordance with the manufacturer's calibration instructions at intervals not to exceed 31 days. A record of the sensor