

Refuge Alternative Update

January 31, 2014

Refuge Alternative Rule

- Required by 2006 MINER Act and 2008 Appropriations Act for underground coal mines
- Refuge Alternatives consist of four components:
 - Structural
 - Breathable air
 - Harmful gas removal
 - Air monitoring
- 30 C.F.R. §75.1506(a)(3)
 - December 31, 2013 – State approved breathable air, harmful gas removal, and air monitoring components are grandfathered until this time.
 - January 1, 2014 – MSHA approved breathable air, harmful gas removal, and air monitoring components are required.
 - December 31, 2018 – State approved structural components are grandfathered until this time.

Breathable Air Component

Part 7 Approval Benefits



Two oxygen pressure regulators required to eliminate single point of failure of grandfathered single regulator systems to continue providing oxygen to miners should one regulator fail.



New approval provisions require an Oxygen Risk Assessment to ensure the design prevents oxygen fires in refuge alternatives.



Externally viewable gauges allow pre-shift examinations without opening the unit.

Harmful Gas Removal Component

Part 7 Approval Benefits



Approvals require test-proven Purge Systems in airlocks that do not exist in some grandfathered units.



Approvals require 96-hour test-proven Carbon Dioxide Scrubbing systems instead of system designs based on calculations.



Approvals address how excess air is used to maintain positive internal pressure and keep out toxic gases.

Air Monitoring Component

Part 7 Approval Benefits

Approved Air Monitoring Components are located on the outside of refuge alternatives and are available for immediate use.



A single monitor measures all four gases as opposed to a combination of gas badges, monitors, and stain tubes.

Two monitors provide redundancy.



Approval testing assures accuracy and 96-hour continuous operation.

Miners will know what gases are present when they reach the refuge alternative and enter the airlock.



Approval Overview

- 90 Approval Applications Received to Date
 - 67 Component Approvals Issued
 - 23 Under Review or Awaiting Manufacturer Response
- 12 Pending Approval Actions that Impact Refuge Alternative Components Currently Used in Mines