## **Enhancing Respiratory Protection in Mining**

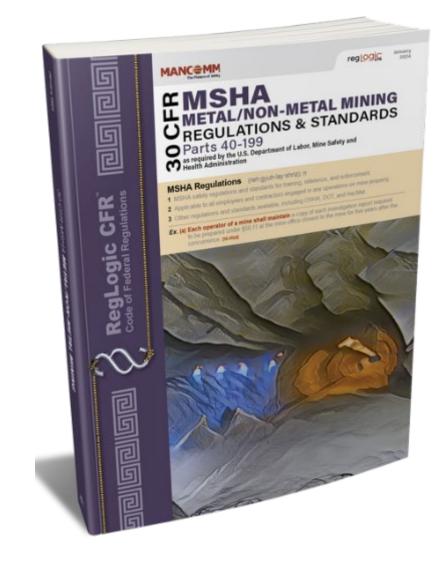
Xiaoliang Wang<sup>1</sup>, Judith C. Chow<sup>1</sup>, John G. Watson<sup>1</sup>, Jocelyn Najera<sup>1</sup>, Diane K. Hale<sup>2</sup>, Dahiana Pimentel<sup>2</sup>, James Lage<sup>3</sup>, and Robert Lage<sup>3</sup>

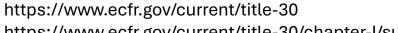
<sup>1</sup>Desert Research Institute (DRI), Reno, NV
<sup>2</sup>Best in the West Safety, Las Vegas, NV
<sup>3</sup>Sonoma Health & Safety Center, Winnemucca, NV



## Section 5

# Responsibilities and Regulations





https://www.ecfr.gov/current/title-30/chapter-I/subchapter-K



### Wearer Responsibilities

- Use the provided respirator in accordance with instructions and training.
- 2. Guard against damage to the respirator.
- 3. Immediately leave the contaminated area if:
  - Contaminant is detected by odor, taste, or irritation;
  - Cartridge reaches end-of-service life or a respirator malfunctions.
- 4. Report any physical or medical condition that could impair the ability to wear a respirator properly.
- 5. Perform a user seal check each time a tight-fitting respirator is worn.



## **Mine Operator Responsibility**

- 1. Select approved respirators and provide them at no cost to miners.
- 2. Establish and maintain a respiratory protection program.
- 3. Allow a miner wearing a respirator to leave the hazardous atmosphere for any respirator-related issues (reasons).
- 4. Investigate respirator malfunctions and ensure corrective measures are taken.
- 5. Establish a change schedule for filters, cartridges, and canisters or use a respirator equipped with an end-of-service life indicator.
- 6. Train miners on the proper and effective use of the provided respirators.
- 7. Ensure that miners wearing tight-fitting respirators perform a user seal check each time they don the respirator.



## Respiratory Protection Program Administrator Responsibilities

- Measure, estimate, or review information on the concentration of airborne contaminant(s) in the work area before respirator selection and periodically during respirator use;
- 2. Ensure medical evaluations, training, and fit testing are performed;
- 3. Select appropriate respirators;
- 4. Maintain records and written procedures;
- 5. Evaluate the respiratory protection program's effectiveness;
- 6. Revise the program as necessary.



### 30 CFR Part 60.14 Respiratory Protection

- Use respiratory protection as a temporary measure when miners must work in concentrations of RCS above the PEL while:
  - Engineering control measures are being developed or implemented;
  - It is necessary by the nature of work involved.
- Transfer affected miners who cannot wear a respirator to another area or occupation at the same mine, where respiratory protection is not required.
- Provide NIOSH-approved atmosphere-supplying respirators or air-purifying respirators; Respirators must be classified as 100 series or high efficiency (HE) filters (≥99.97%).
- Establish a written respiratory protection program with the following elements:
   program administration; standard operating procedures; medical evaluations;
   respirator selection; training; fit testing; maintenance, inspection, and storage (ASTM F3387-19).



#### Other MSHA Standards

#### 1. Surface Metal and Nonmetal Mines

• 30 CFR 56.5005 – Control of exposure to airborne contaminants.

#### 2. Underground Metal and Nonmetal Mines

- 30 CFR 57.5005 Control of exposure to airborne contaminants.
- 30 CFR 57.5060 Limit on exposure to diesel particulate matter.

#### 3. Coal Mines

• 30 CFR 72.710 – Selection, fit, use, and maintenance of approved respirators.



https://www.ecfr.gov/current/title-30/chapter-I/subchapter-K/part-56 https://www.ecfr.gov/current/title-30/chapter-I/subchapter-K/part-57 https://www.ecfr.gov/current/title-30/chapter-I/subchapter-O/part-72