CBRN Escape Respirator

Breathing Gas Control

Concept Requirement:

- $\text{CO}_2$ – Maximum Average Inhaled Concentration of 2.5%
- $\text{O}_2$ – Minimum Inhaled Concentration of 19.5%
CBRN Escape Respirator

Breathing Gas Control

- Concept Requirement for ABMS:
  - Simulate Six Work Rates
  - Low Work Rate – 0.5 l/min VO₂
  - Work Rate – 1.0 l/min VO₂
  - Work Rate – 1.5 l/min VO₂
  - Work Rate – 2.0 l/min VO₂
  - Work Rate – 2.5 l/min VO₂
  - High Work Rate – 3.0 l/min VO₂
CBRN Escape Respirator

Breathing Gas Control

- Benchmark Testing (ABMS):
  - Testing in Process
  - Commercially Available Escape Sets
  - Multiple ABMS Tests with Each Respirator
  - Oxygen Concentrations < 19.5% Observed
  - Carbon Dioxide Levels > 2.5% Observed

Non Conclusive Results
CBRN Escape Respirator

Breathing Gas Control

Benchmark Testing (Human Subject):

- Testing In Process
- Work Rates:
  - Standing
  - Treadmill @ 2.5 mph
  - Treadmill @ 3.5 mph
CBRN Escape Respirator

Breathing Gas Control

- Concept for Two Part Requirement
  - Automated Breathing Metabolic Simulator
  - Human Subject Test
CBRN Escape Respirator

Breathing Gas Control

- ABMS Component of a Two Part Requirement
- ABMS Test To Establish Proper Operation
- ABMS Test @ Six Work Rates
- CO₂ Requirement > 2.5% (To Be Determined)
- O₂ Requirement < 19.5% (To Be Determined)
CBRN Escape Respirator

Breathing Gas Control

- Human Subject Test Concept
- Test at 3 Work Rates
- Standing, Treadmill @ 2.5 mph and 3.5 mph
  - 10 minutes at each work rate

Two Test Subjects

Weight Requirement