

CBRN Escape Respirator

Breathing Gas Control

Concept Requirement:

- CO₂ – Maximum Average Inhaled Concentration of 2.5%
- O₂ – 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 VO_2
 - Work Rate – 1.0 l/min VO_2
 - Work Rate – 1.5 l/min VO_2
 - Work Rate – 2.0 l/min VO_2
 - Work Rate – 2.5 l/min VO_2
 - High Work Rate – 3.0 l/min VO_2



CBRN Escape Respirator

Breathing Gas Control

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

