

CBRN Escape Respirator

CBRN Self Contained Escape CWA Concept

- Sarin (GB) and Mustard (HD) challenge vapor concentrations are the same as SCBA CBRN standard

CBRN Escape Respirator

CBRN Self Contained Escape CWA Concept

- Sarin (GB):
 - Vapor Challenge – 2,000 mg/m³
 - Breakthrough – 0.087 mg/m³ Peak
- 2.1 mg min/m³ Ct
 - Time Agent Generated = 15 minutes
 - Total Test Time = (2 X Respirator Service Time)
= 15 min agent generation + non-generated exposure time

CBRN Escape Respirator

CBRN Self Contained Escape CWA Concept

- Mustard (HD):
 - Vapor Challenge 300 mg/m^3
 - Liquid Challenge 0.86 ml
 - Breakthrough – 0.60 mg/m^3 Peak
 - - $6.0 \text{ mg min/m}^3 \text{ Ct}$
 - Time Agent Generated = 15 minutes
 - Total Test Time = (2 X Respirator Service Time)
= 15 min agent generation + non-generated exposure time

CBRN Escape Respirator

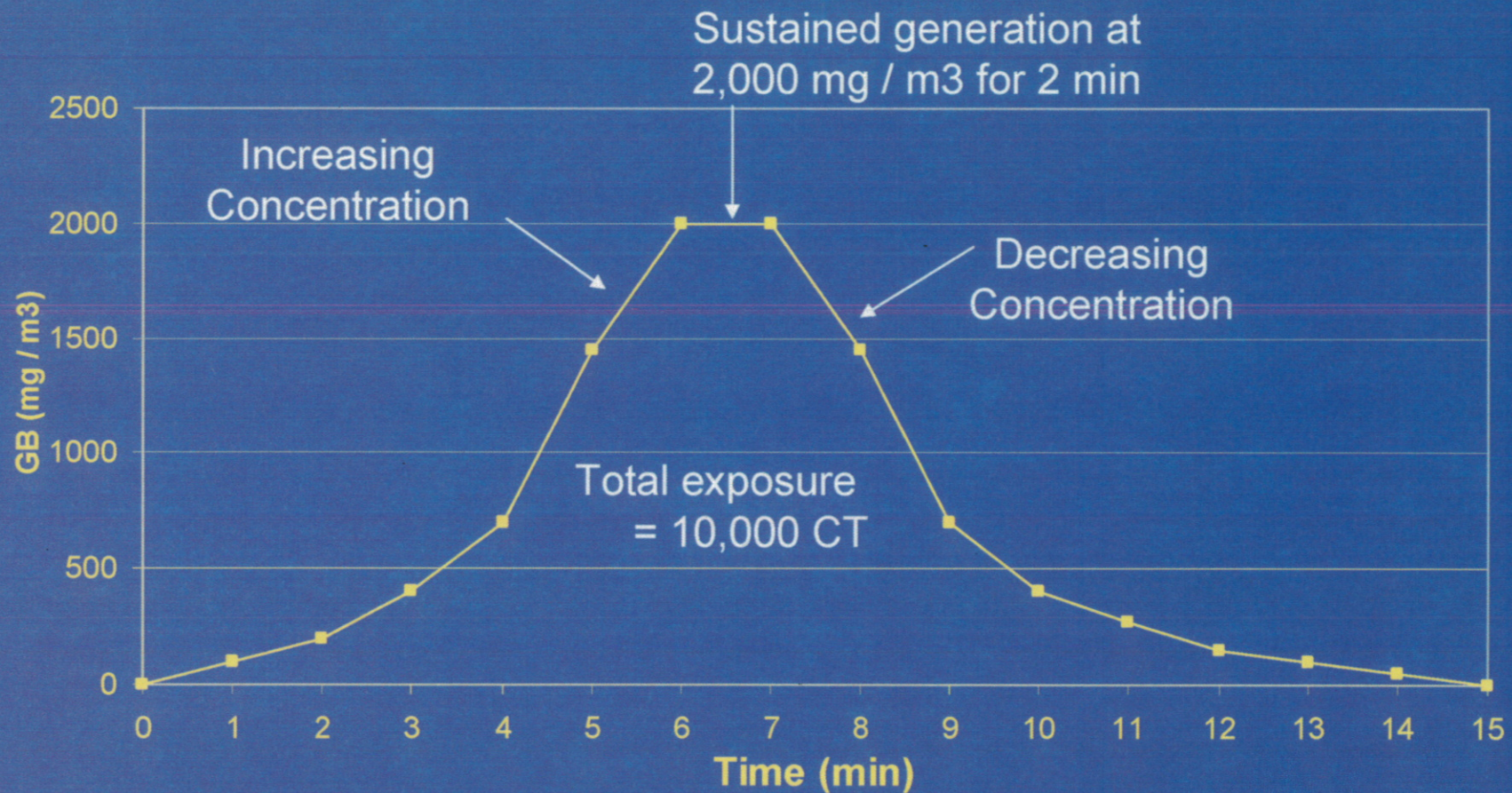
CBRN Self Contained Escape CWA Concept

Live Agent Exposure Profiles

- GB- 10,000 mg min/m³ Ct in 15 minutes requires an exposure of varying concentration
- HD- 4,500 mg min/m³ Ct in 15 minutes is achievable at a constant exposure

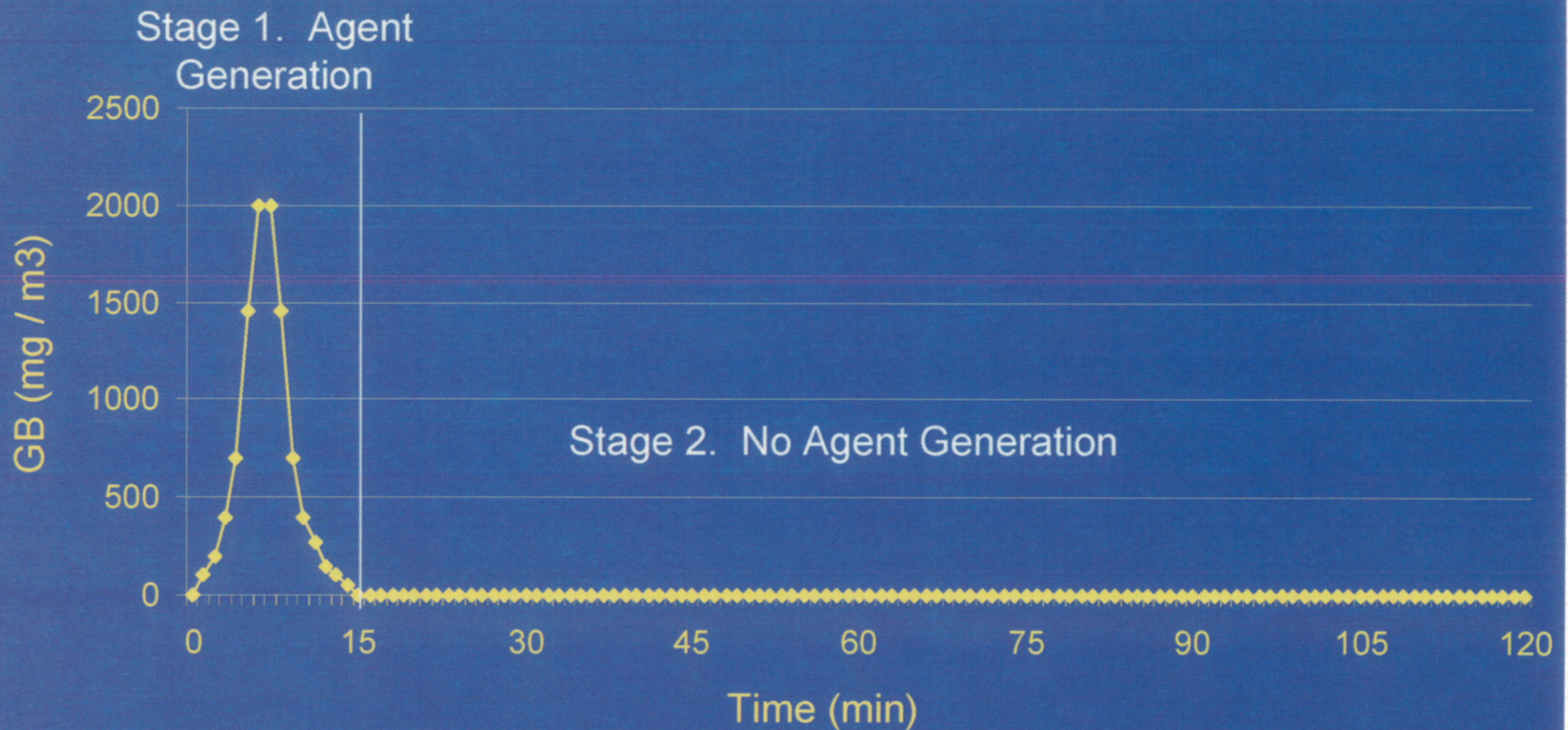
CBRN Escape Respirator (self contained)

GB Test : Stage 1 - Agent Generation



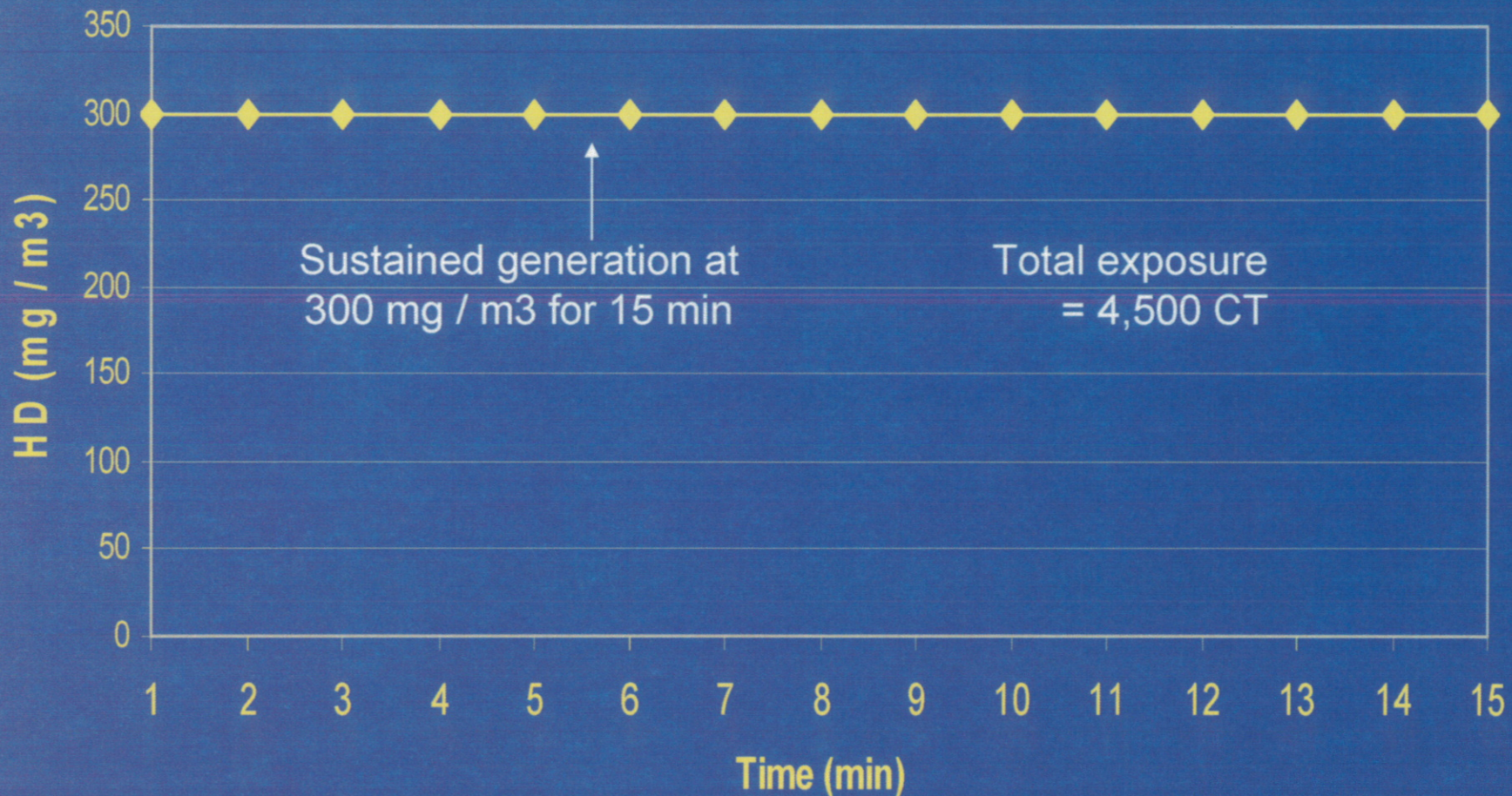
CBRN Escape Respirator (self contained)

GB Test : Stages 1. + 2. For a 60 min Unit



CBRN Escape Respirator (self contained)

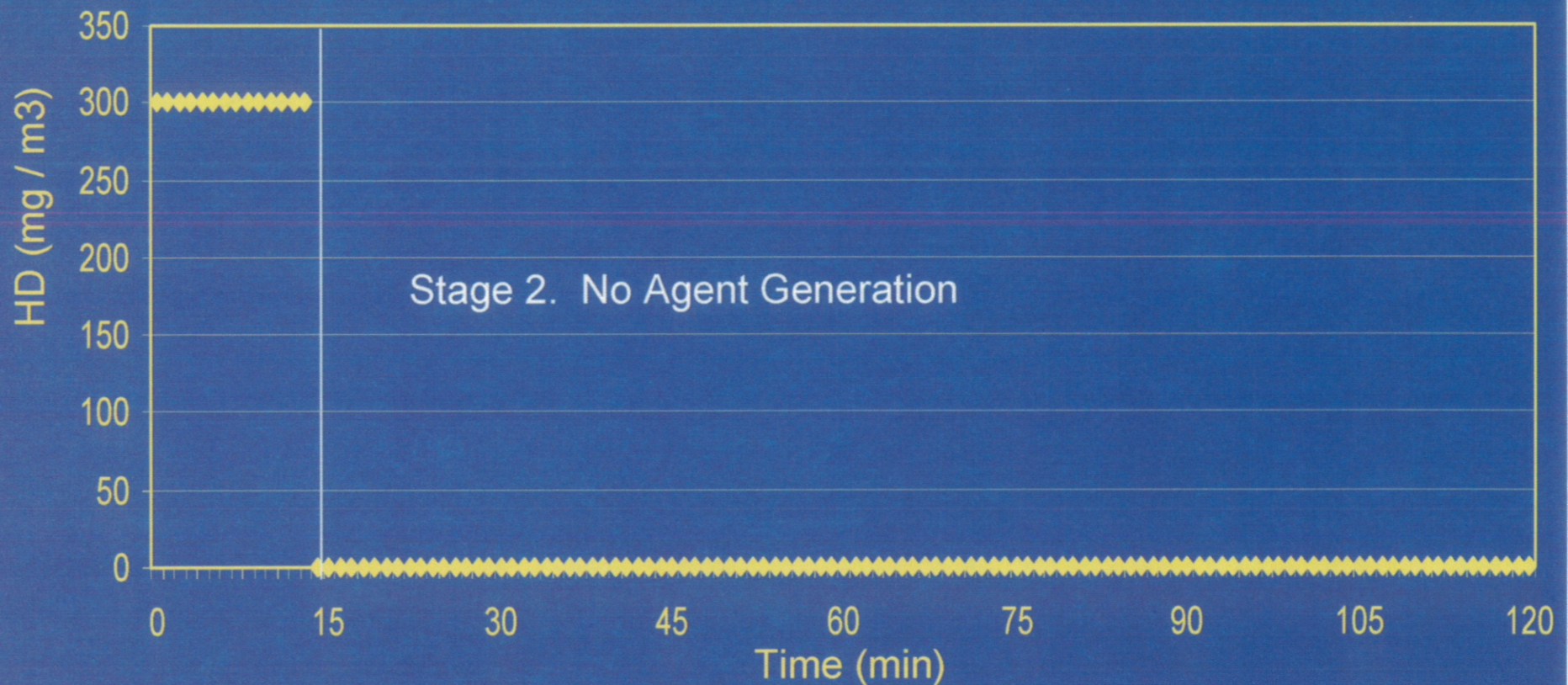
HD Test : Stage 1 - Agent Generation



CBRN Escape Respirator (self contained)

HD Test : Stages 1. + 2. For a 60 min Unit

Stage 1. Agent
Generation



The Protective Equipment Team

Aberdeen Proving Ground
Edgewood Area
Edgewood, Maryland

Raymond R. Lins
25 June 2003



Protective Equipment Team Accreditations

- Accredited for International Standard ISO/IEC 17025 certified by American Association for Laboratory Accreditation (A2LA)
- Certified Testing Laboratory for National Institute for Occupational Safety and Health (NIOSH)



NIOSH Escape Respirator Testing

- May 2003: Air Purifying Escape Respirator (Escape) R&D Testing
- Development of Standard Testing Procedure (STP)
- October 2003: Escape Respirator Certification Testing



Protective Equipment Team

Swatch Testing

- 3 sets of 6 Swatch Test Systems using MINICAMS for Agent Detection
- 1 set of 6 Swatch Cups for Vapor or Liquid Challenge Using a MINICAM for Agent Detection
- 1 set of Six Dawson Cups with a MINICAM for Agent Detection
- 2 Hoods with Holders for 100 Fly Cups
- 1 Q170 Tester
- ASTM 739 Certified by A2LA for NFPA Swatch Testing



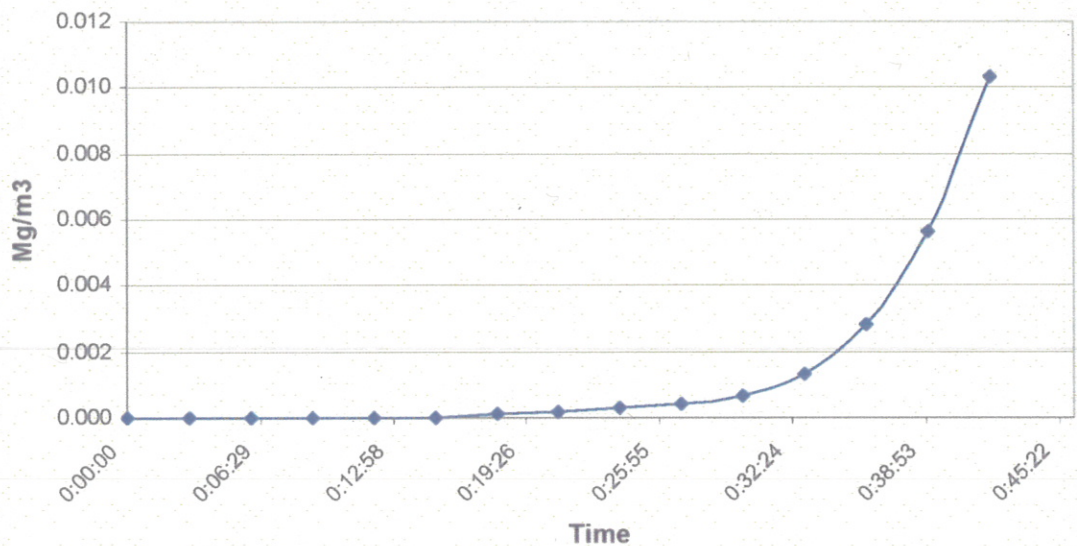
June 2003 Development of Standard Testing Procedure (STP)

Closed Circuit Rebreather System Which Uses
Lithium Hydroxide as a Passive Scrubber

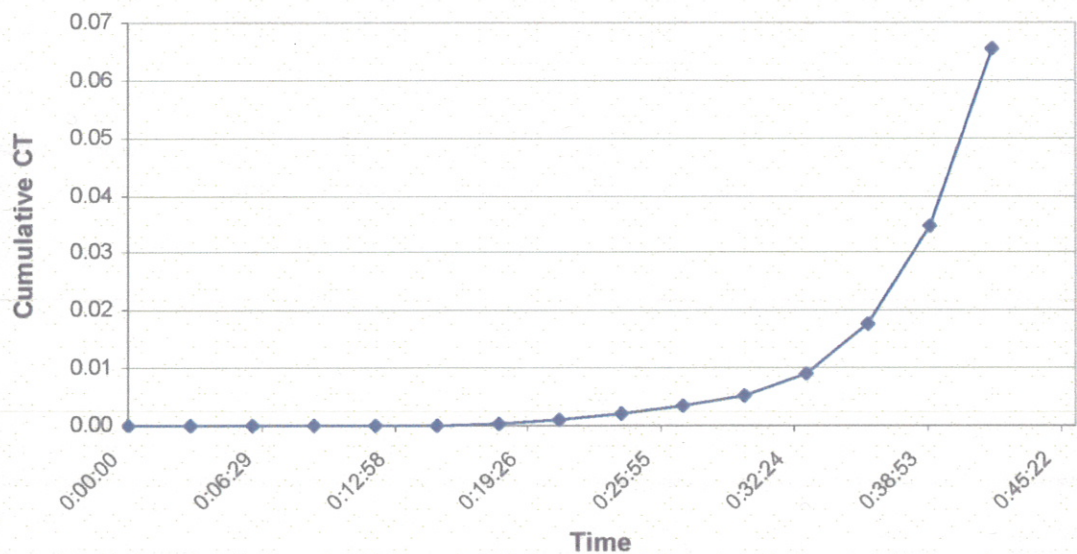
Tested Using SMARTMAN Test Systems



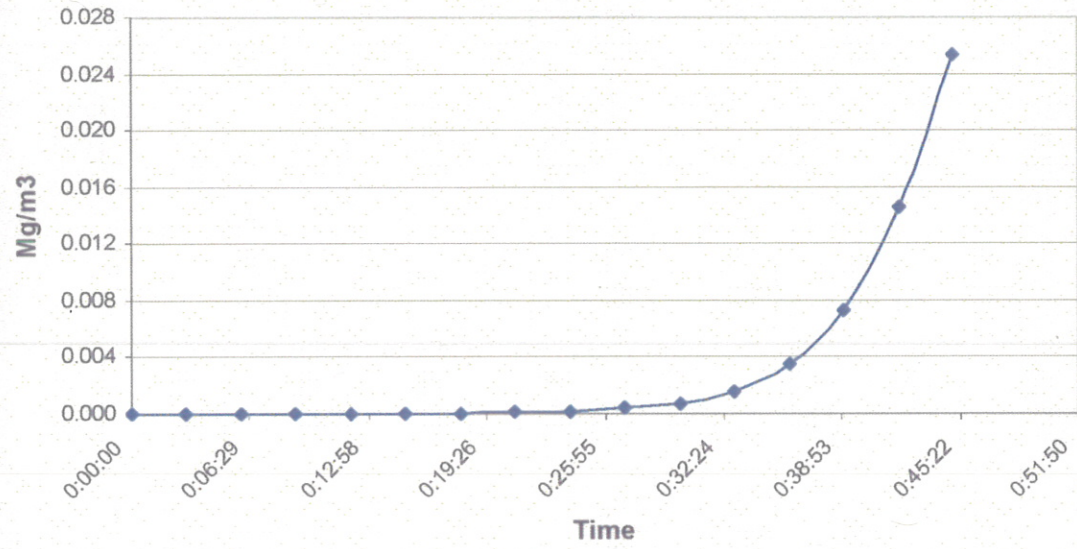
GB Test # 1



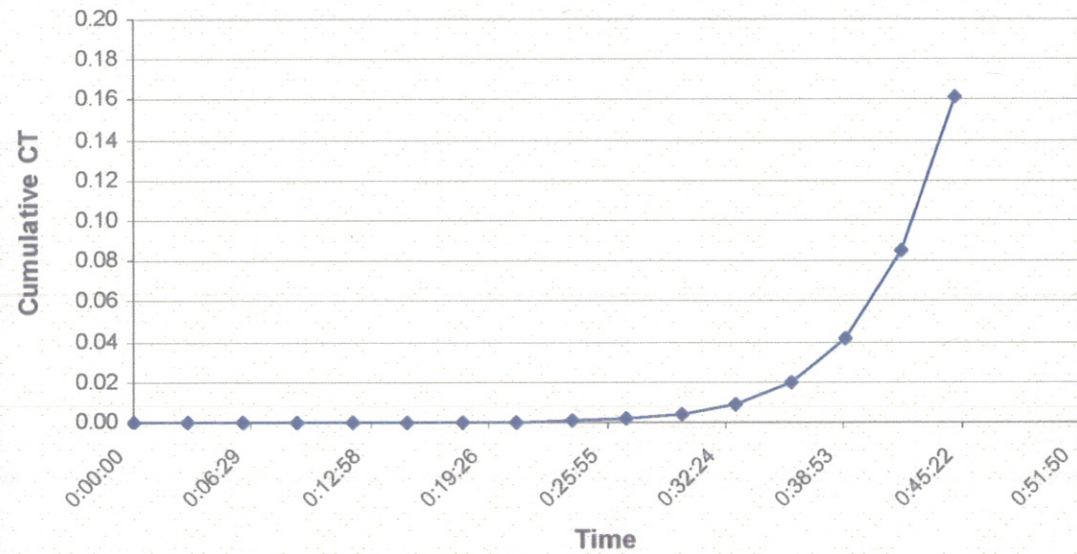
GB Test # 1



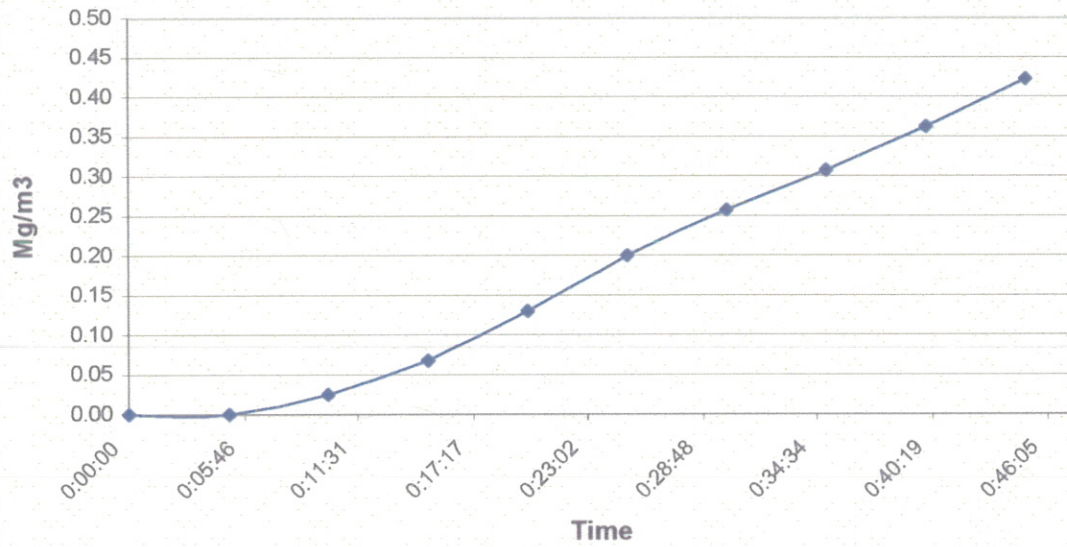
GB Test # 3



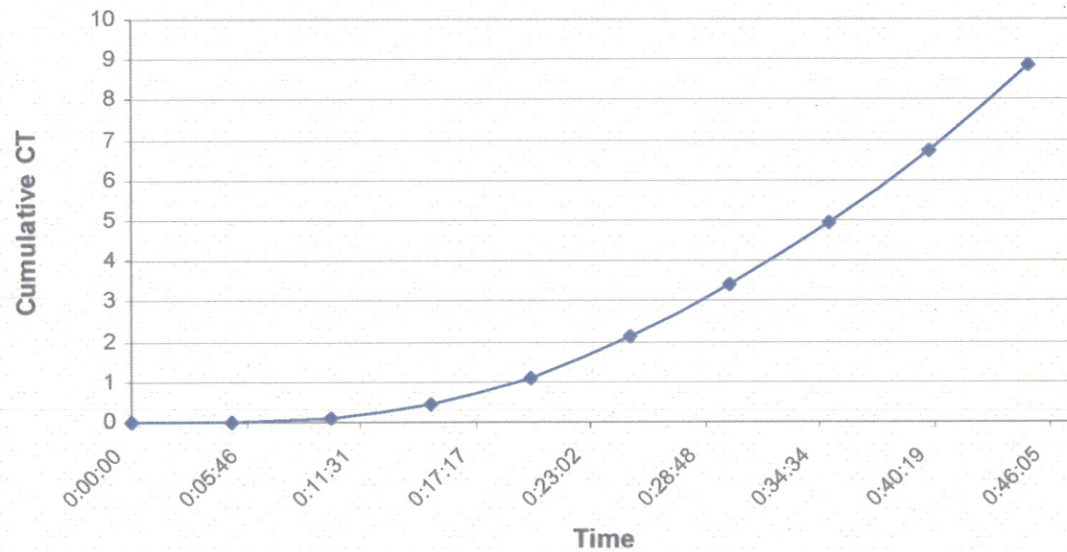
GB Test # 3



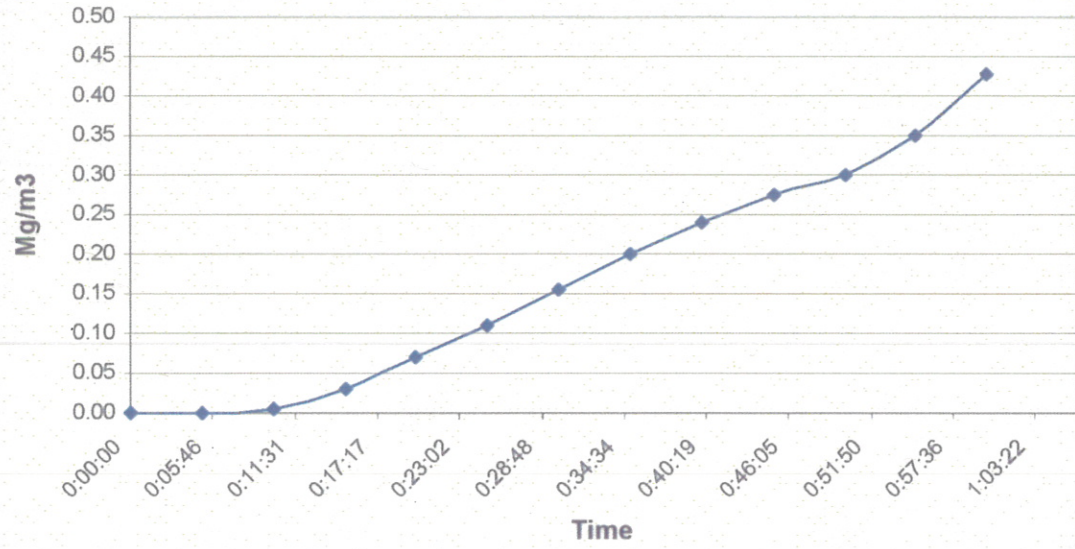
HD Vapor Test # 1



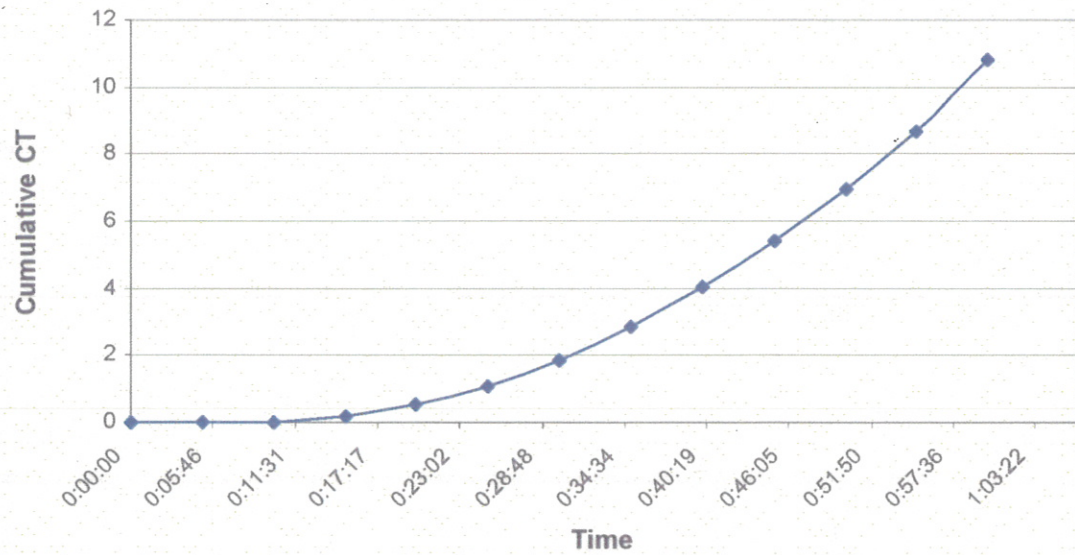
HD Vapor Test # 1



HD Vapor Test # 2



HD Vapor Test # 2



NIOSH Approved

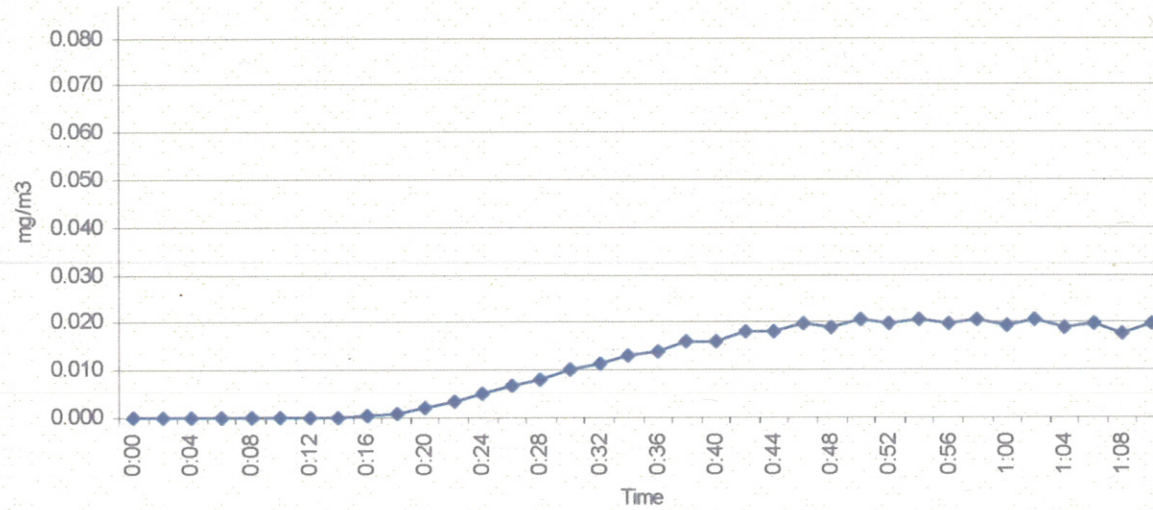
Self-Contained Compressed Oxygen Breathing Apparatus for Escape Only

Contains Lithium Hydroxide

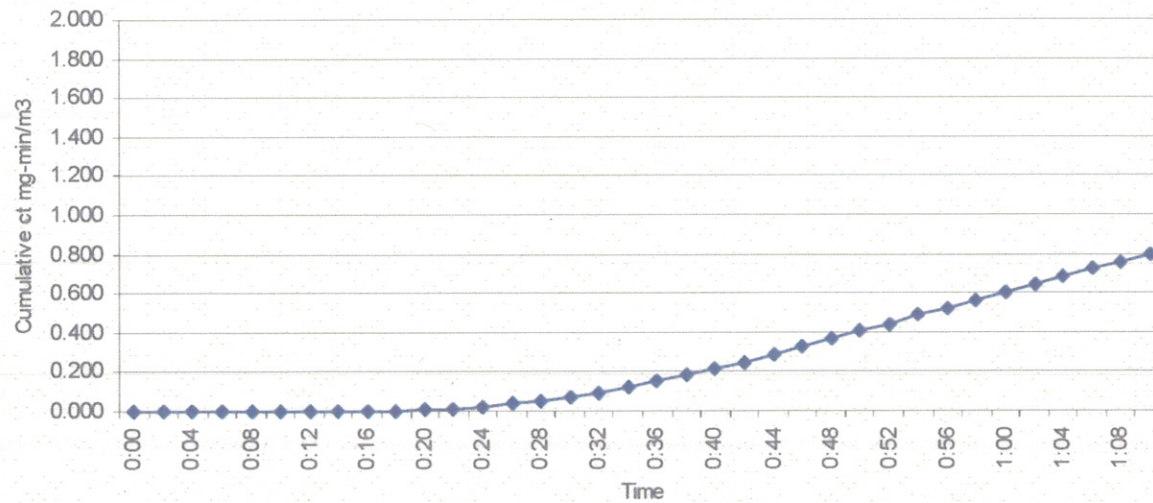
Tested Using Modified SMARTMAN Agent Generation System

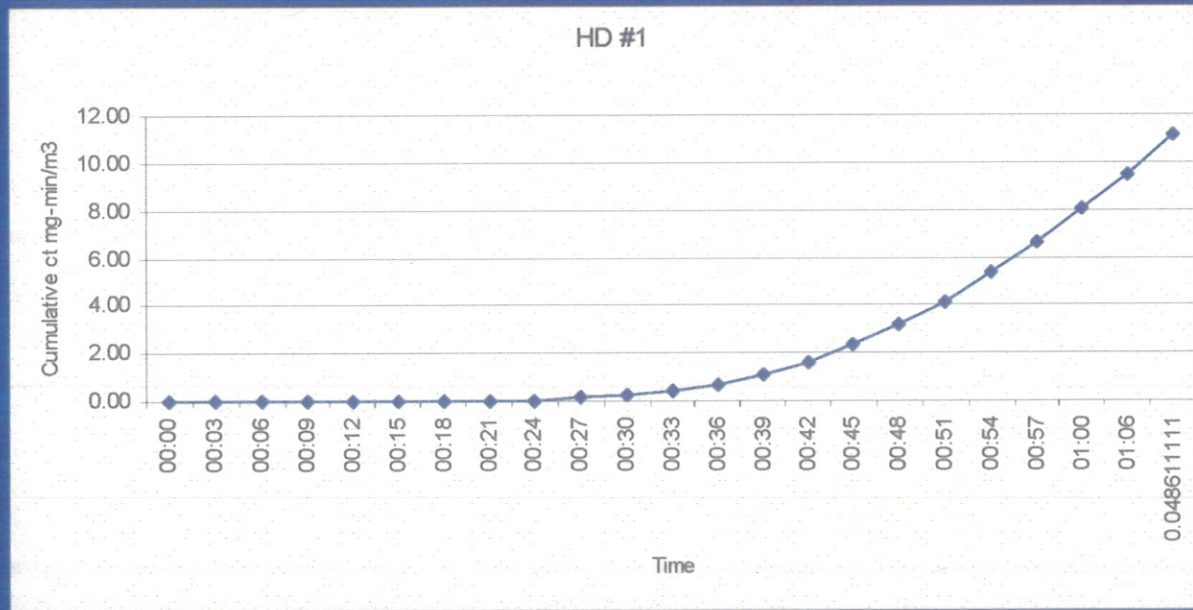
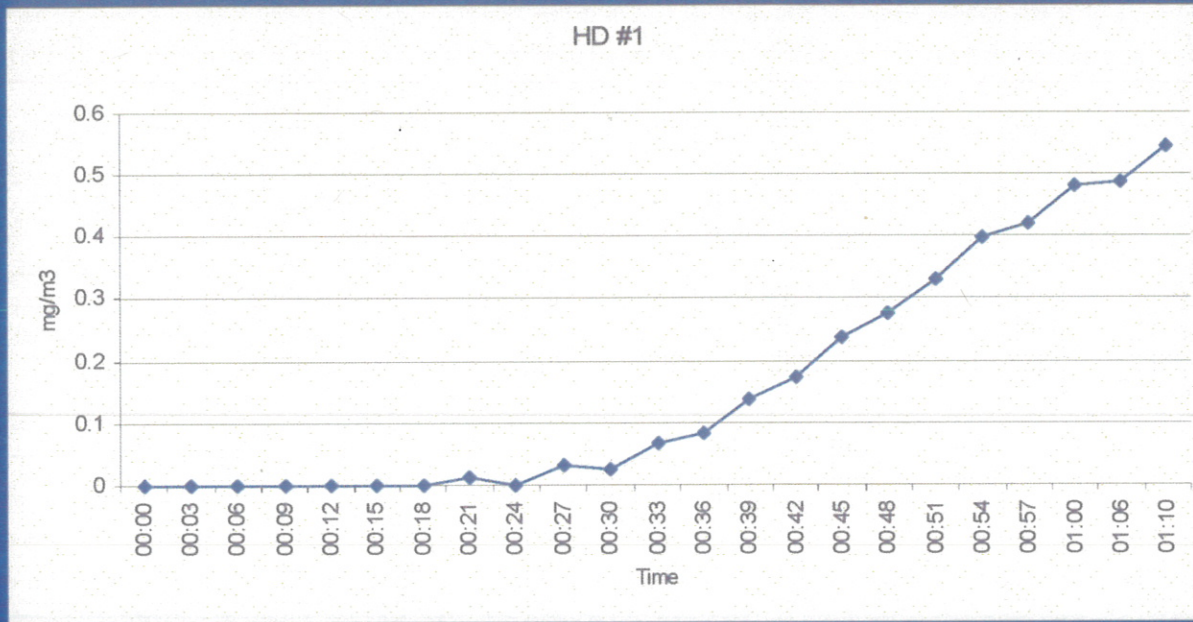


GB #1

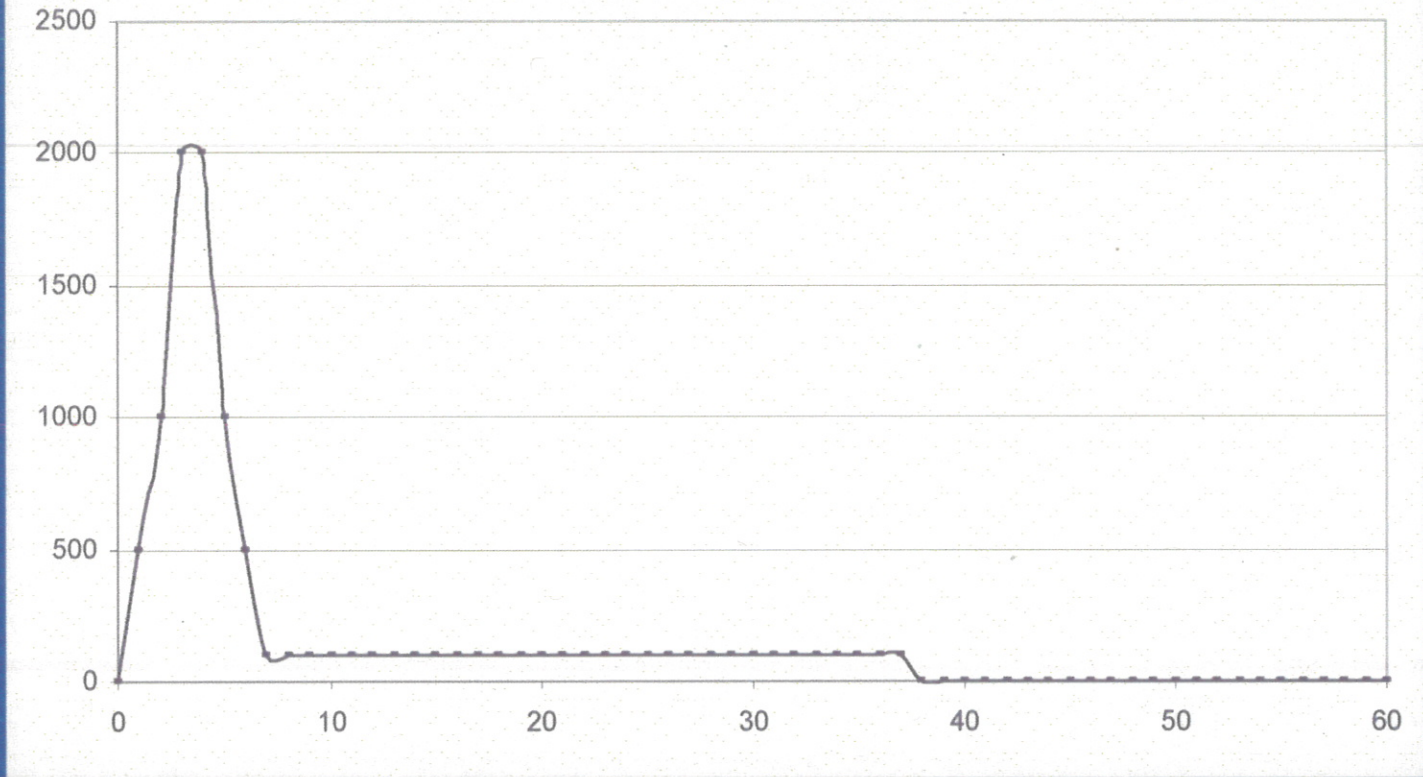


GB #1





GB Concentration mg/m3



Protective Equipment Team

SMARTMAN Test Systems

- 5 Medium SMARTMAN Agent Test Systems
- 1 Medium SMARTMAN CK Test System
- 1 Medium SMARTMAN Leak Test System
- 2 Small SMARTMAN Leak Test Systems
- July 2003 1 Small SMARTMAN Agent Test System
- September 2003 2 Medium SMARTMAN Test Systems
- September 2003 2 Additional Medium SMARTMAN Test Systems with Automated Breathing Simulators

