

18 July 2017

Mr. Scott Schuler
Soteria Technologies
2 Hicks Street
Lindenhurst, NY 11575

Re: Hazardous Environment Test
Report: 3-20223

Dear Mr. Schuler,

A test was conducted to validate the efficacy of the Oxy-Gen Escape Respirator (“Oxy-Gen”) to protect the user in a hazardous environment that could otherwise be lethal due to both significantly reduced oxygen levels and smoke. This test was conducted at Govmark Fire Laboratories, by Govmark personnel, on November 8, 2016.

A hazardous environment consisting of reduced oxygen and smoke was prepared within a test chamber. A test subject, wearing Oxy-Gen entered the chamber and remained within for 16 minutes. The test subject was then reviewed for signs of reduced oxygen, smoke inhalation, and/or other deleterious effects from the chamber atmosphere.

Upon exit, the test subject showed no signs of reduced oxygen or smoke inhalation, and had the same oxygen saturation level as before entering the chamber (99%). These results indicate that Oxy-Gen provided protection from the hazardous test environment, consisting of both reduced oxygen and smoke.

Respectfully,

Bobby Brown
President

Objective:

The objective of this test was to validate the efficacy of the Oxy-Gen Escape Respirator (“Oxy-Gen”) to protect the user in a hazardous environment that could otherwise be lethal due to both significantly reduced oxygen levels and smoke.

Introduction:

Environments which can harm respiratory health and/or be unable to support life can be created in emergency situations, with the most common being fires and chemical leaks.

Such environments are classified as hazardous due to one or both of the following:

1. reduced oxygen levels
2. smoke / airborne toxins

The Oxy-Gen Escape Respirator utilizes closed circuit rebreather technology intended to protect the user from hazardous environments caused by one or both of the above, by isolating the user’s respiratory system from the environment, and treating the user’s exhaled breathe, allowing it to be safely inhaled.

Procedure:

A custom test chamber (Figure 1) was constructed to allow for control of the environment.

Figure 1: Test chamber



A hazardous low oxygen, smoke filled environment was created within the chamber (Figure 2) by means of introducing nitrogen and smoke (via a smoke generator manufactured by Superior Smoke, part # 2B Smoke Candle - see Appendix A for safety data sheet).

Figure 2: Smoke generator ignited within test chamber



Under supervision of emergency medical technicians, a test subject wearing Oxy-Gen entered the chamber (Figure 3), and remained for 16 minutes.

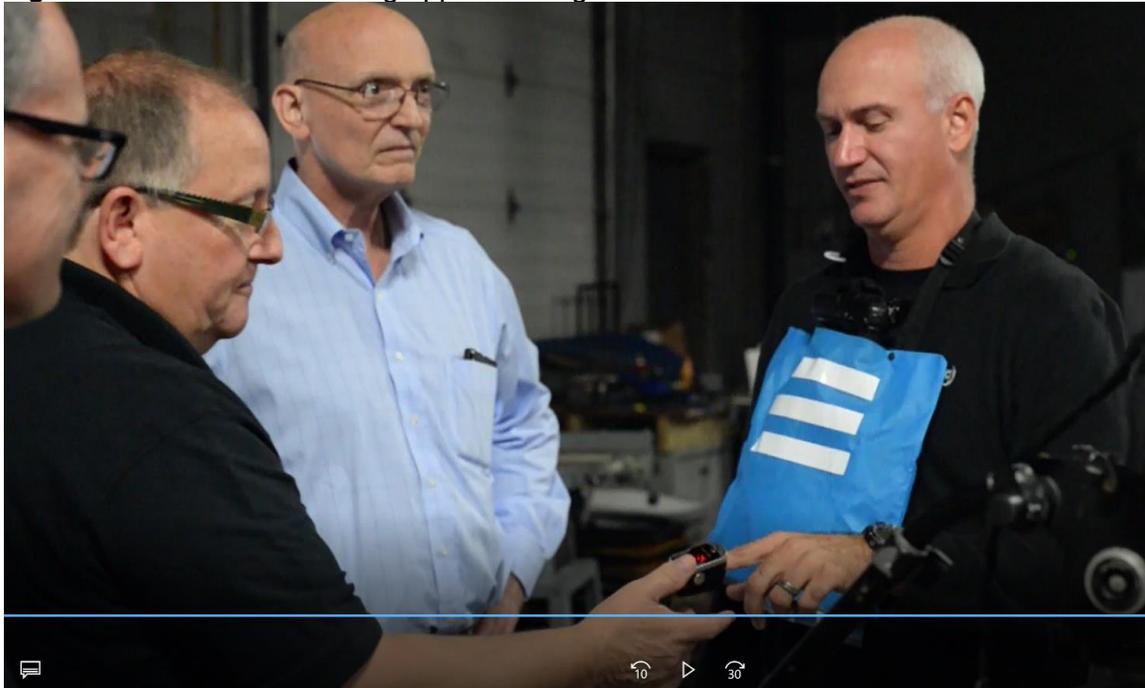
Figure 3: Test subject in test chamber



Over the test period, oxygen percentage readings taken within the chamber at 1 minute intervals, producing an average oxygen percentage of 8.5%, with the range being 7.5% to 11.3% (as measured by a SERVOMEX Analyzer Series 1400, data within Appendix B).

Immediately upon exit, the test subject was reviewed for breathing pattern, signs of reduced oxygen and/or smoke inhalation, and had his oxygen saturation level measured via a pulse oximeter (Figure 4).

Figure 4: Pulse oximeter being applied to finger after exit from test chamber



Results:

Upon exit, the test subject was alert, exhibited a normal breathing pattern, showed no signs of reduced oxygen or smoke inhalation, and had the same oxygen saturation level as before entering the chamber (99%) (Figure 5).

Figure 5: Test subject pulse oximeter reading



Conclusions:

Based upon the test subject remaining within a hazardous test environment consisting of reduced oxygen (average 8.5%) and smoke for 16 minutes, and immediately upon exiting showing no signs of reduced oxygen or smoke inhalation, the results indicate that Oxy-Gen isolated the user from the hazardous environment and provided adequate oxygen.

Appendix A: Smoke generator safety data sheet (page 1)

Superior® Smoke Generator

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 04/29/2015 Revision date: 04/29/2015 Supersedes: 01/18/2011

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Mixture
Trade name	: Superior® Smoke Generator
CAS No	: NA
Product code	: NA

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	: Restricted to professional users
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1.3. Details of the supplier of the safety data sheet

SUPERIOR SIGNAL COMPANY LLC
 P.O. Box 96
 Spotswood, NJ 08884
 Phone: 732-251-0800
 Fax: 732-251-9442
 Email: info@superiorsignal.com

1.4. Emergency telephone number

Emergency number	: 732-251-0800
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Carc. 1B H350

Full text of H-phrases: see section 16

NOTE: Exposure is highly unlikely when product is used as directed. Product is sealed in heavy cardboard tube or metal canister. After ignition, product slowly combusts and hexachloroethane is consumed. Direct contact with product does not occur.

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)



GHS08

Signal word (GHS-US)	: Danger
Hazard statements (GHS-US)	: H350 - May cause cancer (Dermal, oral)
Precautionary statements (GHS-US)	: P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P280 - Wear protective clothing P308+P313 - If exposed or concerned: Get medical advice/attention P405 - Store locked up P501 - Dispose of contents/container to in accordance with local regulations

2.3. Other hazards

Other hazards not contributing to the classification	: After ignition, Smoke Generator emits smoke (mild Zinc Chloride solution) that can be irritating to the eyes, respiratory tract, and mucous membranes. When used as directed exposure should be limited, and normally poses no hazard. Persons with known respiratory sensitivity should not be exposed to smoke. Moderate exposure may temporarily result in irritation, inflammation, and difficulty breathing – moving to fresh air will reverse these effects. Heavy exposure may result in coughs, chills, fever, and pulmonary edema, requiring medical treatment. Overwhelming exposure can be dangerous and is to be avoided. Persons who will be exposed to sustained heavy smoke should wear Self Contained Breathing Apparatus (SCBA).
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2.4. Unknown acute toxicity (GHS-US)

Not applicable

Appendix B: Oxygen measurements within test chamber

Test chamber oxygen level measurements at 1 minute intervals, as measured by a Servomex 1400 Series Analyzer:

Minute	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Avg
O2 %	9.4	11.3	9.1	7.9	7.5	7.5	7.6	7.8	7.9	8.1	8.1	8.4	8.6	8.7	8.9	8.9	9.1	8.5