

Received 3/22/06 MSHA/OSRV
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**From:** Tom McKenna [tom@microporeinc.com]  
**Sent:** Wednesday, March 22, 2006 3:46 PM  
**To:** zzMSHA-Standards - Comments to Fed Reg Group  
**Subject:** Response to RIN 1219-AB44 from Micropore Inc.

A Word document containing the same information below is attached to this email

## B. Breathing Apparatus

A mine rescue breathing apparatus is a device which provides oxygen for a mine rescue team member to use in contaminated mine atmospheres.

- 1. U.S. mine rescue teams use devices by Draeger and Biomarine. What other types of breathing apparatuses are currently in use by foreign mine rescue teams?
- 2. Are these other types of breathing apparatuses the best available for quick response in mine emergencies?
- 3. Do these apparatuses incorporate the best available technology? Can they be readily obtained? Do they meet U.S. approval and certification standards?
- 4. How can they be improved? How long would it take and at what cost?

**Response on part 3:** ExtendAir® CO<sub>2</sub> absorbents provide the ability to load the breathing apparatus in less than 1 minute compared to 15 minutes for granular systems. Additionally granular systems can settle over time which degrades performance. ExtendAir® systems do not settle and therefore the performance does not change with time. Finally ExtendAir® absorbents offer lower work of breathing which provides better comfort levels for the users. The only unit using ExtendAir® technology that is available today is the Biomarine Revolution. NIOSH approval testing starts in April on this unit.

## C. Self-Contained Self-Rescuers (SCSR)

SCSRs are devices that provide miners with an MSHA required one hour of useable oxygen to be used for a mine emergency escape. Currently, SCSRs rely on two different technologies. One type uses a chemical reaction to generate oxygen. The other type uses compressed oxygen.

- 1. Is there more effective technology to protect miners than the SCSR currently available? If so, please describe.
- 2. Should an SCSR be developed that provides more than one hour duration of oxygen? What duration is feasible considering that miners must carry the SCSR? Would it be desirable to require smaller and lighter SCSR with less oxygen capacity to be worn on miner's belts while at the same time requiring longer duration SCSR to be stored in caches?
- 3. MSHA standards require each mine operator to make available an approved SCSR device or devices to each miner. Should mines be required to maintain underground caches of SCSR for miners to use during an emergency, or should each miner have access to more than one SCSR?
- 4. SCSR are currently required to be inspected at designated intervals pursuant to 30 CFR 75.1714-3. Should SCSR be inspected more frequently than the current requirements?
- 5. SCSR service life is determined by MSHA, NIOSH and the device's manufacturer. The service life can

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range from ten to fifteen years depending on the type of SCSR. Should the service life of SCSRs be reduced to five years or a different time limit?

**Response on part 2:** Based on ExtendAir® experience working with breathing apparatus and sealed environments from 15 minutes to 96 hours, we recommend a 3 tier strategy be used to provide realistic long term life support in a mining accident.

- Tier 1 is belt worn 15 minute to 60 minute SCSR
  - Use this device to reach a cache of 4-hour breathing apparatus.
- Tier 2 is the 4-hour breathing apparatus
  - Use this device to attempt escape and if escape is not possible, allow sufficient time to travel to a rescue chamber.
- Tier 3 is the rescue chamber
  - This device provides 4 to 7 days of life support

#### **D. Rescue Chambers**

A rescue chamber is an emergency shelter to which persons may go in case of a mine emergency for protection against hazards. A rescue chamber could provide, among other things, an adequate supply of air, first aid, and an independent communication system.

- 1. Should rescue chambers be required for coal mines?
- 2. What characteristics should they have? Should they be mobile?  
Should the rescue chamber be semi-permanent, or built into the mine?
- 3. How long should they support a breathable environment?
- 4. How many people should they support?
- 5. How many rescue chambers should be required--how far apart should they be located?

**Response on part 1:** It is a fact that it is not always possible to escape a mine accident using any breathing apparatus. Rescue chambers keep miners alive for up to 7 days while awaiting rescue. They are used in other countries and have been successful in saving lives.


**Response on part 2:** The life support system should be able to function without external power. Systems which do not require power are simpler and more reliable and require less maintenance. ExtendAir® CO2 absorbents do not require any power. They are more reliable, require minimal maintenance and use less storage space. (No batteries or blowers needed to operate the life support system). Oxygen supplies that do not need power are also currently used in shelters.

**Response on part 3:** 4 – 7 days allows for flexibility in rescue strategies to improve survivability.

Please contact me with any specific questions.

**Tom McKenna**  
*VP Sales and Marketing*  
**Micropore, Inc.**

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## **C. Self-Contained Self-Rescuers (SCSR)**

SCSR's are devices that provide miners with an MSHA required one hour of useable oxygen to be used for a mine emergency escape. Currently, SCSR's rely on two different technologies. One type uses a chemical reaction to generate oxygen. The other type uses compressed oxygen.

- 1. Is there more effective technology to protect miners than the SCSR's currently available? If so, please describe.
- 2. Should an SCSR be developed that provides more than one-hour duration of oxygen? What duration is feasible considering that miners must carry the SCSR? Would it be desirable to require smaller and lighter SCSR's with less oxygen capacity to be worn on miner's belts while at the same time requiring longer duration SCSR's to be stored in caches?
- 3. MSHA standards require each mine operator to make available an approved SCSR device or devices to each miner. Should mines be required to maintain underground caches of SCSR's for miners to use during an emergency, or should each miner have access to more than one SCSR?
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- Tier 3 is the rescue chamber
  - This device provides 4 to 7 days of life support

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