

IN 86-24

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

April 11, 1986

IE INFORMATION NOTICE NO. 86-24: RESPIRATOR USERS NOTICE: INCREASED

INSPECTION FREQUENCY
CONTAINED BREATHING AP
CYLINDERS

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or a construction permit (CP), research and test reactor facilities, fuel cycle licensees and Priority 1 material licensees.

Purpose:

This notice is to alert licensees of a recent Respirator Users Notice issued by the National Institute for Occupational Safety and Health (NIOSH) of the Department of Health and Human Services. The NIOSH notice recommends an increased inspection frequency for fiberglass-wrapped aluminum air cylinders used for self-contained breathing apparatus (SCBA). These cylinders (both hoop and fully wrapped) may develop neck cracks, leading to greater than normal loss of air while in storage or use. This unexpected loss of air (and reduction of rated service time) could lead to reduced worker safety and less effective emergency response. The Users Notice applies to all 4500- and 2216-psi rated fiberglass cylinders manufactured under Department of Transportation (DOT) exemptions DOT-E 7235 and DOT-E 8059.

This IE notice updates information previously provided in IE Information Notices 83-68, 84-34, and 85-48, which covered only the cracking problems with the high pressure, 4500-psi hoop-wrapped cylinders. It is expected that licensees will review the information for applicability to their facilities and consider actions, if appropriate, to upgrade their SCBA cylinder inspection program. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or response is required.

Description of Circumstances:

On January 17, 1986 NIOSH issued a Respirator Users Notice recommending that certain SCBA fiberglass-wrapped air cylinders be inspected at least weekly to ensure that these cylinders maintain required air pressure when stored in a ready-to-use status. For cylinders used on a daily basis, NIOSH recommends cylinder air pressure be checked daily and before each use. Because SCBA use (other than for training) at nuclear facilities is infrequent relative to commercial firefighting, the NRC staff and NIOSH currently agree that a weekly

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inspection frequency would be a proper NRC-licensee response to the NIOSH recommendations. In any case, adequately trained and qualified SCBA users check for proper respirator function (including cylinder pressure) before each use. Licensees now typically inspect SCBA units at least once a month in accordance with the guidance in NUREG-0041, Manual of Respiratory Protection Against Radioactive Materials" (Chapter 9, Section 9.2).

The NIOSH recommendations apply only to the fiberglass-wrapped aluminum cylinders (includes 2216 and 4500 psi) manufactured under DOT exemptions DOT-E 7235 and DOT-E 8059. DOT-E 7235 hoop-wrapped cylinders are manufactured by Luxfer USA Limited (Luxfer) and Acurex Aeotherm manufactures the DOT-E 8059 fully-wrapped cylinders. According to DOT, Acurex uses aluminum cylinder liners supplied by Luxfer.

NIOSH reported that the cracks have been found by visual inspection during the DOT-required, periodic hydrostatic testing. To better characterize the extent of the cracking problem and to assess necessity for further action, NIOSH requests that all users test suspected leaking cylinders and report certain test data to the SCBA manufacturer and to DOT. In the general interest of safety for workers and maintaining an adequate emergency response capability, licensees may wish to share this information with other potential users, such as local fire departments, along with checking their own cylinders.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate regional office or this office.

Technical Contacts: James E. Wigginton, IE
(301) 492-4961

Roger L. Pedersen, IE
(301) 492-9475

Attachments:

1. NIOSH Respirator Users Notice (January 17, 1986)
2. List of Recently Issued IE Information Notices

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RESPIRATOR USERS NOTICE

Inspection of Certain Aluminum Cylinders for Breathing-gas Pressure

The light weight and high charging pressure of aluminum cylinders have resulted in their widespread acceptance and use with self-contained breathing apparatus (SCBA). The National Institute for Occupational Safety and Health (NIOSH) estimates that more than half of the SCBA of 30- and 60-minute duration in regular use today are equipped with aluminum cylinders.

Since first receiving reports of defective fiber-glass wrapped aluminum cylinders in 1983, NIOSH has advised users of potential hazards associated with use of certain fiber-glass wrapped aluminum cylinders. At this time, NIOSH believes there is sufficient evidence to warrant issuance of this NOTICE regarding inspection of fiber-glass wrapped aluminum cylinders.

The presently available evidence indicates that fiber-glass wrapped aluminum cylinders manufactured under Department of Transportation (DOT) exemptions DOT-E 7235 and DOT-E 8059 (including 2216 and 4500 psi) may,

upon aging, develop neck cracks and may leak breathing gas during storage and use. This may result in significant loss of breathing gas from an unattended cylinder. If undetected, this loss of breathing gas could be dangerous to the user.

Based on this, NIOSH recommends that where SCBA are equipped with fiber-glass wrapped aluminum cylinders, inspection for cylinder pressure should be made at least weekly, for stored units. When used on a daily basis, as in fire fighting, cylinder pressure should be checked daily and immediately before use.

If a leak is suspected, the cylinder and cylinder valve should be tested as prescribed in American National Standard, Z88.5-1981, Practices for Respiratory Protection for the Fire Service, Section 6.2.4.2.

Leaks in cylinders should be reported to the SCBA manufacturer who will, in turn report them to the cylinder manufacturer. The numbers and charging pressures of leaking cylinders should also be reported to DOT (Mr. Art Mallen, DOT Office of Hazardous Materials, 400 7th St. SW, Washington, DC 20590) and to NIOSH (Mr. John Moran at the address shown at the top of this letter).

Aluminum cylinders used with SCBA, with exemption numbers other than DOT-E 7235 and DOT-E 8059 are not covered in this notice. Self-contained self rescuers used in mines are also not included.

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R E M I N D E R

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Manufacturers of MSHA/NIOSH-approved SCBA
Incorporating DOT-E 7235 4500 Fiber-glass Wrapped Aluminum Cylinders

The following manufacturers incorporate DOT-E 7235 4500 cylinders in their MSHA/NIOSH-approved SCBA:

- o Bendix
- o Clifcon Precision
- o Draeger
- o Siebe Gorman
- o Scott
- o U.S.D. (SurvivAir)

DOT-E 7235 4500 cylinders must be retrofitted by Luxfer (Telephone: 714-684-p 5110) with steel neck rings, to prevent explosive rupture. DOT regulations prohibit charging of any DOT-E 7235 4500 cylinder that has not been fitted with a steel neck ring. Any apparatus utilizing a DOT-E 7235 4500 cylinder without a neck ring, is considered unapproved by MSHA/NIOSH.

Change in Address of Manufacturer's Contact

The following address change has been reported to NIOSH for manufacturer's personnel who are responsible for handling reports of problems with MSHA/NIOSH-approved respirators:

Clifton Precision: New Address:
750 West Sproul Road,
Springfield, PA 19064-4084
Contact: Mr. Martin Ziegler

John B. Moran
Director, Division of Safety Research